



Service Manual

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Constellation* Vision System Service Manual

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MANUAL REVISION RECORD

DATE	REVISION	ECN NUMBER AND DESCRIPTION
August 2008	A	20082197 - Initial release of Constellation* Vision System Service Manual.
May 2010	B	20100618 - Major update affecting almost all pages: Section 1: Added configuration table, updated spec table, updated all screen shots. Section 2: Added Cassette test info, updated pneumatic and illuminator theories. Sections 3, 4, 6: Completely updated section; new information added. Section 5: Updated schematics to latest revision. Section 7: Deleted unpacking and installation procedure.
August 2012	C	20121196 - Major update affecting almost all pages. Changes include: CR3 updates, heelswitch, RFID hardware, CPC pneumatic connections. Section 1: New labeling, CR3 screens, and miscellaneous changes/corrections Section 2: New Host theory, updated Fluidics block diagram, and miscellaneous changes/corrections. Section 3: Updated Illuminator disassembly, and miscellaneous changes/corrections. Section 4: Updated tools table, new AGF test tubing drawing, deleted spare parts table, added tray arm caution, updated message tables, and miscellaneous changes/corrections. Section 5: Updated schematics to latest revisions. Section 6: Updated drawings and parts lists to latest revisions.
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IMPORTANT NOTICE

Equipment improvement is an on-going process and, as such, changes may be made to the equipment after this manual is printed. Accordingly, Alcon makes no warranties, expressed or implied, that the information contained in this service manual is complete or accurate. It is understood that if this manual is used to perform service on the equipment by other than trained personnel, the user assumes all risks in the use of this manual.

In order to protect the goodwill associated with Alcon, and its products, maintain Alcon's standards, and provide its customers with a high quality of service, Alcon strongly recommends that all servicing of this equipment be performed by Alcon-trained service personnel. Such personnel receive in-depth, extensive training in the servicing of the equipment, including training in the diagnosis and correction of problems that may arise with the equipment. Any servicing of this equipment by persons other than Alcon-trained service personnel may expose those persons, subsequent users of this equipment, patients, and other third parties to significant risk of serious injury and/or death. Alcon will not assume responsibility for the effect of the repairs, damages, or personal injuries arising from repairs by any third party.

CAUTION

Federal law restricts this device to sale by or on the order of a physician.

WARNINGS AND CAUTIONS

Pay close attention to warnings and cautions in this manual. Warnings are written to protect individuals from bodily injury. Cautions are written to protect the instrument from damage.

UNIVERSAL PRECAUTIONS

Universal precautions shall be observed by all people who come in contact with the instrument and/or accessories to help prevent their exposure to blood-borne pathogens and/or other potentially infectious materials. In any circumstance, wherein the exact status of blood or body fluids/tissues encountered are unknown, it shall be uniformly considered potentially infectious and handled accordingly. This is in accordance with OSHA guidelines.

Comments or corrections concerning this manual should be addressed to:

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SECTION ONE GENERAL INFORMATION

Introduction

The *Constellation** Vision System is a multifunctional surgical tool for use in anterior and posterior segment ophthalmic surgeries. The product's capabilities include driving a variety of handpieces that provide the ability to cut vitreous and tissues, emulsify the lens, illuminate the posterior segment of the eye, and apply diathermy to stop bleeding. Vacuum is used to remove ocular matter from the eye and is provided by connecting tubing from the handpiece to a port on the fluidics cassette. Irrigation/infusion capability is provided to replace fluid in the eye, and enters the eye directly via either an infusion cannula or flows through a handpiece. The graphical operator interface is menu driven. The operator provides inputs using the touchscreen panel, the remote control, voice commands, and the footswitch.

The *Constellation** Vision System is a multi microprocessor-controlled ophthalmic surgical instrument with associated memory and input/output (I/O) circuitry. The system communicates with the user via its Front Panel display, with voice confirmations, and with tones.

An automatic self-test is initiated each time the system power is turned on. If the system does not pass the self-test, either a Fault screen or an error message is displayed depending upon the cause of the issue. When the system successfully completes the self-test, it automatically goes into the Setup mode.

This section of the manual describes the system hardware, the user interface, and the accessories that may be used with the system.

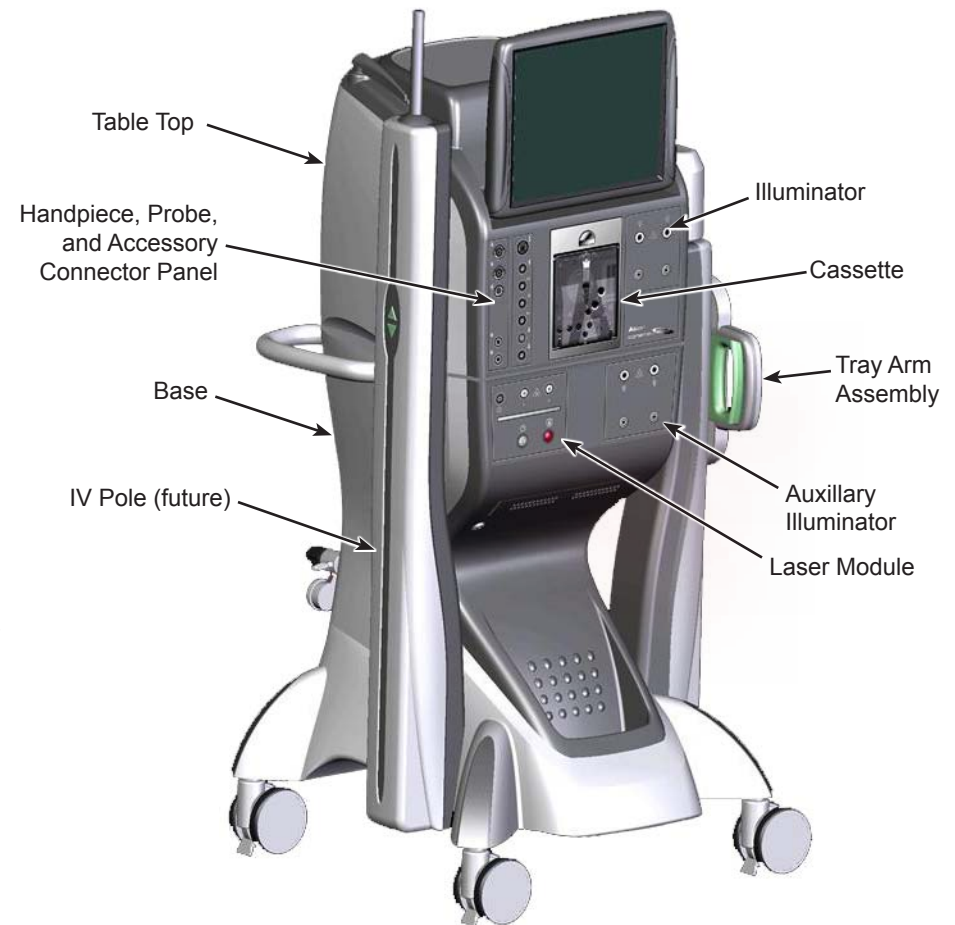


Figure 1-1 The *Constellation** Vision System - The *Constellation** Vision System is a multifunctional surgical tool is used in anterior and posterior segment ophthalmic surgeries.

System Configurations

The *Constellation** Vision System is designed with a modular approach that allows the system to be highly configurable to meet the needs of many users. The system is designed around the Table Top where the accessories listed below can be added for expanded functionality.

- Table Top
- Base
- Laser Module
- Auxiliary Illuminator
- Tray Arm Assembly (includes ballast and support column)

The Table Top can operate as a standalone unit (Configuration 1), and is also the primary user interface that operates and controls the add-on accessories. All add-on accessories attach to the Base therefore, at a minimum, the Base must be installed prior to any system level customization. The table below shows the nine possible configurations for the *Constellation** Vision System. Part numbers and ordering information is located in Section Six of this manual.

TABLE 1-1 SYSTEM CONFIGURATIONS

Configuration	Table Top	Base	Tray Arm Assy	Laser Module	Auxiliary Illuminator
1	x				
2	x	x			
3	x	x	x		
4	x	x	x	x	
5	x	x	x		x
6	x	x	x	x	x
7	x	x		x	
8	x	x			x
9	x	x		x	x

About This Manual

NOTE: This manual includes information for all systems currently in the field. The following references are used throughout the manual to specify which version of the system the information is related to:

- CA1 for software version 2.01.10
- CR2 for software version 2.02.60
- CR3 for software version 3.00.61
- CR4 for software version 4.00.xx

If no version is specified, then the information relates to all systems.

This manual is divided into seven sections as follows:

Section One - General Information

This section gives a general description of the *Constellation** Vision System features and components. Cautions and Warnings, screen displays, specifications, icons used with the system, and labels are also included.

Section Two - Theory of Operation

This section gives detailed descriptions of how the *Constellation** Vision System operates starting at the system level and working down to the PCB (Printed Circuit Board) level. Detailed block diagrams are provided at the end of this section.

Section Three - Parts Location and Disassembly

This section contains parts location diagrams along with field level disassembly procedures.

Section Four - Maintenance & Troubleshooting

This section contains system maintenance procedures and troubleshooting information.

Section Five - Schematics

This section contains system interconnect diagrams, fluidic diagrams, pneumatic diagrams, and cabling schematics.

Section Six - Parts Lists and Drawings

This section contains parts lists and exploded drawings for each major assembly.

Section Seven - Additional Information

This section contains information on accessories and optional equipment that may require service.

Reference Documents

Although this manual provides the necessary information for maintaining optimum performance of the *Constellation** Vision System, it does not contain all of the operating procedures or functional descriptions contained in the operator's manual. In addition, the Warnings and Cautions in the operator's manual also apply for this service manual. The operator's manual supplements information provided in this manual, and should be available on-site with the system.

If you have any questions or require additional information, please contact your local service representative or the Technical Services Department at:

Alcon Laboratories
15800 Alton Parkway
Irvine, CA 92618
(949) 753-1393
(800) 832-7827

If you are located outside the United States, please contact your local authorized Alcon distributor.

CAUTION

Federal Law restricts this device to sale by or on the order of a physician.

Receiving Inspection

The system was inspected mechanically and electrically prior to shipment. If the shipping container appears damaged, ask that the carrier's agent be present when the system is unpacked. The system should be inspected for external damage (i.e. scratches, dents, or broken parts). If damage is discovered or if the system fails any of the functional tests notify the carrier and an Alcon representative. Retain the shipping container and packing material for the carrier's inspection. As necessary, file a claim with the carrier or, if insured separately, with the insurance company.

Table 1-2 CONSTELLATION* VISION SYSTEM SPECIFICATIONS

TABLETOP:		
Dimensions (length x width x height):	51 cm (20 in) x 48 cm (19 in) x 61 cm (24 in)	
Weight:	61 kg (135 lb)	
BASE:		
Dimensions:	74 cm (29 in) x 74 cm (29 in) x 97 cm (38 in)	
Weight:	<ul style="list-style-type: none">• Base (no add-ons): 52.12 kg (115 lb)• Base w/lluminator: 58 kg (128 lb)• Base w/lluminator & Laser: 64.5 kg (142.2 lb)	
Note: If a base other than the optional Alcon base is used, it must be able to hold up to 250 pounds.		
TRAYARM:		
Dimensions:	<ul style="list-style-type: none">• Tray: 56 cm (22 in) x 36 cm (14 in)• Arm Fully Extended: 127 cm (50 in)• Support Column: 110 cm (43 in) x 13 cm (5 in) x 15 cm (6 in)	
Weight:	<ul style="list-style-type: none">• Tray and Arm: 11.7 kg (25.8 lb)• Support Column: 5.5 kg (12.3 lb)	
BALLAST:		
Dimensions:	35 cm (14 in) x 35 cm (14 in) x 5 cm (2 in)	
Weight:	Weight: 25.5 kg (56.2 lb)	
ENVIRONMENTAL LIMITATIONS:		
	Operating	Non-Operating
Altitude:	-125 to 2000 m (-410 to 6562 feet)	-125 to 3000 m (-410 to 9843 feet)
Temperature:	10° C to 35° C (50° F to 95° F)	-10 to 55°C (14° F to 131° F)
Relative Humidity:	10% to 95% without condensation	10% to 95% without condensation
IP CODE	Console: IPX0 Footswitch: IPX8	
ELECTRICAL REQUIREMENTS:	<p>The console accepts the following ranges or input commercial power voltages and frequencies and meets the leakage currents specified in IEC 60601-1. Protection against electrical shock is Class I.</p> <p>100-120 Vac, 50/60 Hz, 12 A max. 220-240 Vac, 50/60 Hz, 6 A max.</p>	

FOOTSWITCH	
Dimensions (length x width x height):	43.2 cm (17 in) x 26 cm (10.25 in) x 14 cm (5.5 in)
Weight:	5.4 kg (12 pounds)
Environmental:	The footswitch construction is water tight in compliance with IEC 60601-1 and IEC 60601-2-2.
Electrical:	The footswitch is connected to the console via electrical cable. All power and communications enter/exit the footswitch from this cable.
PERFORMANCE SPECIFICATIONS	
PRESSURIZED INFUSION/IRRIGATION @SEA LEVEL:	
Range:	0 to 120 mmHg ¹
Accuracy:	±(2% of setpoint +5 mmHg)
Flow Rate:	0 - 20 cc/min. for infusion (20 Ga) 0 - 60 cc/min. for irrigation
Setpoint Transient Response Time:	500 ms maximum
¹ Liquid, measured at the infusion or irrigation cassette outlet, at sea level.	
IOP CONTROLLED INFUSION:	
Setpoint Range:	0-120 mmHg
Repeatability ² :	± 2 mmHg ³
Setpoint Response Time:	<500 ms (20 Ga)
Transient Disturbance Response Time:	<2000 ms ⁴
Flow Range:	0-20 cc/min
² BSS* Irrigating Solution Dual chamber mode. ³ BSS* Irrigating Solution medium, 20 gauge high flow Cannula, steady state condition at rated flow range ⁴ Transient condition from no flow state to 10 cc/min	
ASPIRATION/SUCTION @SEA LEVEL:	
Standard & Reduced Pressure Range:	0-650 mmHg Vacuum
Minimal Pressure Range:	0-600 mmHg Vacuum
Pressure Accuracy:	±(2% of Setpoint +5 mmHg)
Flow Range:	
Posterior Modalities:	0-20 cc/min
Anterior Modalities:	0-60 cc/min
Transient Response Time (Standard Pressure Range):	From 0 to -400 mmHg @0 cc/min 10-90% Rise Time:300 msec max 90-10% Fall Time: 300 msec max

VACUUM @ SEA LEVEL:	
Vitrectomy:	0 to 650 mmHg
Fragmentation:	0 to 650 mmHg
Extrusion:	0 to 650 mmHg
Extraction:	0 to 650 mmHg
Irrigation/Aspiration:	0 to 650 mmHg
Phacoemulsification:	0 to 650 mmHg
LOW PRESSURE AIR SOURCE (LPAS) @SEA LEVEL:	
Pressure Range:	0 – 120 mmHg (air, measured at cassette connection, at sea level)
Pressure Accuracy:	±2% of setpoint +5 mmHg
Flow Rate:	1.2 slpm minimum at 120 mmHg
VITRECTOMY:	
Submodes:	3D, Momentary, PropVac, VitWet
Cut Rate:	
UltraVit* 10000	100 to 10000 cpm
Probe:	
UltraVit* 7500	100 to 7500 cpm
Probe:	
UltraVit* 5000	100 to 5000 cpm
Probe:	
UltraVit* 2500	100 to 2500 cpm
Probe:	
DIATHERMY:	
Frequency:	1.5 Mhz ± 10%
Wave shape:	Sinusoidal
Output power:	10 Watts ±20% at 100% setting with 75 ±10% ohm non-inductive load
Output voltage:	163 Vpp maximum at 100% setting without load
Power range:	0 - 100% of maximum output power
DIATHERMY ACCESSORIES (Rated Voltage):	
Single Use Bipolar Cables:	846 Vpp
Reusable Bipolar Cables:	1200 Vpp
All Brushes:	1410 Vpp
All Forceps:	1110 Vpp

Table 1-2 CONSTELLATION* VISION SYSTEM SPECIFICATIONS (continued)

PERFORMANCE SPECIFICATIONS...continued	
ILLUMINATION:	
Light Output through 20GA Fiber Probe:	<ul style="list-style-type: none"> 0-200 hrs: 16 ± 6 lumens at 115% set point ¹ 201-400 hrs: 16 ± 6 lumens at 115% set point ¹
Light Output through 23GA Fiber Probe:	<ul style="list-style-type: none"> 0-200 hrs: 23 ± 13 lumens at 115% set point ¹ 201-400 hrs: 23 ± 13 lumens at 115% set point ¹
Light Output through 25GA Fiber Probe:	<ul style="list-style-type: none"> 0-200 hrs: 23 ± 13 lumens at 115% set point ¹ 201-400 hrs: 23 ± 13 lumens at 115% set point ¹
¹ Based on a representative nominal UFR fiber.	
FRAGMENTATION:	
Submodes: Tip Stroke @ 100%: Resonant Frequency: Pulse Rate Range:	Linear, Fixed, Momentary 3.1 ± 0.5 mils at 100% power 43.5 ± 3.0 KHz 0 – 100 pps
SCISSORS:	
Submodes: Proportional Pressure: Multi Cut Rate:	Proportional, Multi-Cut 0-50 psi @sea level single cut to 450 cpm
PROPORTIONAL AND CONTINUOUS REFLUX @SEA LEVEL:	
Pressure Range: Pressure Accuracy:	0 to 120 mmHg ±(2% of Setpoint +5 mmHg)
MICRO REFLUX:	
Pressure Range: Volume:	70 ± 30 mmHg ² 15 ± 10 µL ²
² measured with unoccluded 20 Ga <i>UltraVit*</i> probe and aspiration tubing, 50% setting.	
VISCOUS FLUID CONTROL:	
Submodes:	Inject, Extract
Injection Pressure:	0 to 551.6 KPascal @ Standard Source Pressure (0 to 80 psi) 0 to 482.7 KPascal @ Reduced Source Pressure (0 to 70 psi)
Extract Vacuum at Sea Level:	0 to 650 mmHg

AUTO-GAS FILLING (AGF):	
Maximum Gas Pressure:	10 psig
Fill Purity:	See gas concentration chart in Section Two.
AUTO-STOPCOCK:	
Response Time: Pressure (Liquid): Rated Flow (Liquid): Pressure (LPAS): Rated Flow (LPAS):	0.5 seconds minimum 0-120 mmHg 20 cc/min 0-120 mmHg 1.2 slpm
PHACOEMULSIFICATION:	
Submodes: Tip Stroke @ 100%: Frequency: Pulse Rate Range: Burst Length: Burst Pulse durations:	Burst, Pulsed, Continuous 3.5 ± 0.5 mils 30 - 46.5 KHz 0-100 pulses per second 2.5 sec – user adjustable 5 ms to 500 ms
OZIL:	
Frequency: Pulse Rate Range: Burst Pulse Durations:	30 - 46.5 KHz 0-100 pps 5 ms to 500 ms
ANTERIOR VITRECTOMY:	
Submodes: Cut Rate:	Wet, Dry 0 to probe maximum
LASER (optional):	
<i>Treatment beam:</i> Class: Power: Wavelength:	4 30 mW to 2 W (maximum) 532 nm
<i>Aiming beam:</i> Class: Power: Wavelength:	2 less than 1 mW 635 nm ± 5 nm
INTREPID* AutoSert* IOL Injector:	
Max Speed:	4.4 mm/s
DOCTOR MEMORIES:	
Storage Capacity:	No hard limit; advisory displayed when less than 15% of disk space is available.
TIMER:	
Range: Resolution:	0 to 99:99:99 1 s
REMOTE CONTROL:	
Method: Channels:	Infrared 4

TABLE 1-3 TERMS AND ABBREVIATIONS

Term or Abbreviation	Description
ACMI connector	The type of connector used on fiber optic probes.
AGF	Auto-Gas Filling
<i>BSS PLUS</i> * Intraocular Irrigating Solution	Sterile intraocular irrigating solution enriched with bicarbonate, dextrose, and glutathione.
cc/min	A unit of flow.
CE	A mandatory conformity mark on many products placed on the single market in the European Economic Area (EEA)
cmH ₂ O	Centimeters of water. A unit of pressure.
cpm	Cuts Per Minute
CSA	Canadian Standards Association
Detent	A discrete footpedal position at which more force is required to depress the footpedal to the next position.
Diathermy	The production of heat in body tissues by electric current for therapeutic purposes.
Extrusion	A mode where vacuum is available to remove fluid/matter.
F/AX	Fluid Air Exchange
Frag	Fragmentation
GA	Gauge
Global Function	A function whose status and controls are independent of the current footpedal position and surgery mode.
I/A	Irrigation/Aspiration
I/O	Input/Output
IOP	Intraocular Pressure
IEC	International Electromechanical Commission
ISO	International Standards Organization

Term or Abbreviation	Description
IPX0/8	International Protection code - Solid objects X (not specified) water 8/0 (continuous immersion/ no test required)
IV	Intravenous
LCD	Liquid Crystal Display
mmHg	Millimeter of Mercury. A unit of vacuum and pressure.
Monolith	System configuration in which the <i>Constellation</i> * tabletop and base are paired together.
N/A	Not Applicable
PEL	Patient Eye Level. A difference in height between the cassette and the patient eye level.
PIN	Personal Identification Number
psi	Pressure per Square Inch. A unit of pressure.
pps	Pulses Per Second
RS-232	A standard for serial binary data signals commonly used in computer serial ports.
slpm	Standard Liters Per Minute
TUV	Technical Inspection Association
Type BF	A classification for devices that have conductive contact with the patient, or have applied parts that are fixed in medium or long term contact with the patient
U/S	Ultrasound
USB	Universal Serial Bus
VFC	Viscous Fluid Control
VGA	Video Graphics Array
Vit	Vitrectomy. Extraction of the vitreous from the vitreous cavity.

LABELING

Labels (including silk-screened labels) and icons may vary according to the date of manufacture of your system. To determine which label and icon version shown in Figures 1-2 and 1-3 apply to your system, compare the figures with the labels on your system and make the appropriate selection.

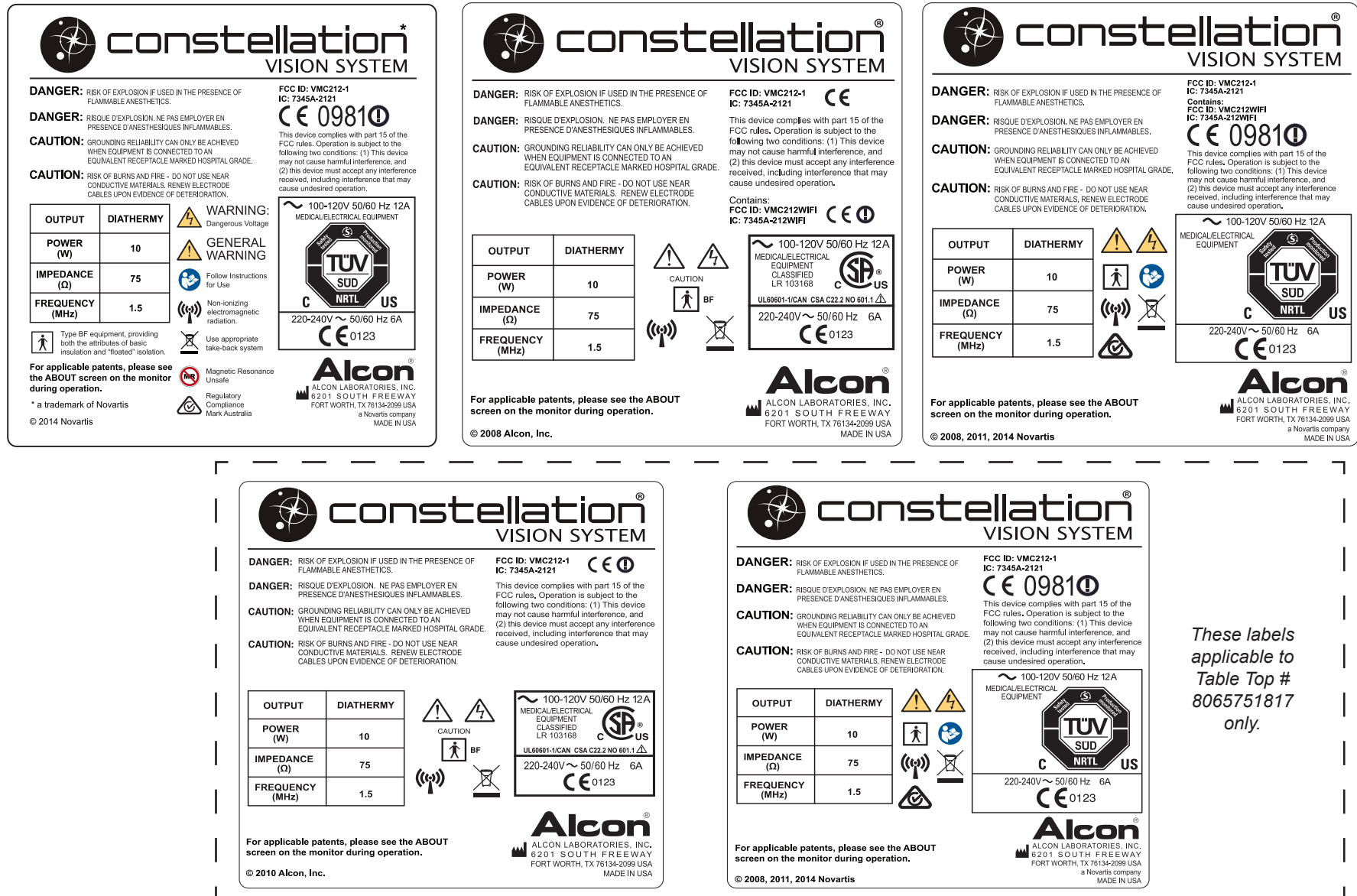


Figure 1-2 LABELS USED ON THE CONSTELLATION* VISION SYSTEM

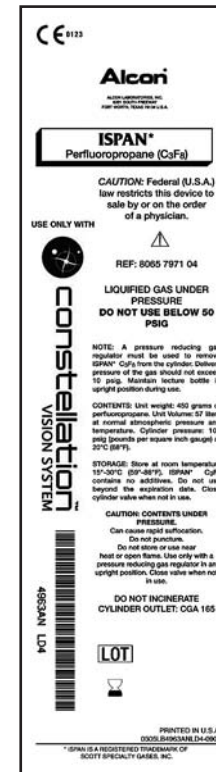
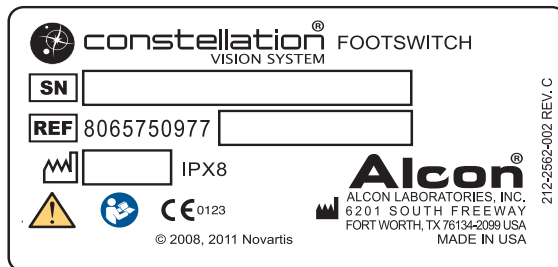
Labels used on the system console are identified and illustrated here for reference only.



58-120 Psi
400-825 kPa



15-30 Psi
103-107 kPa



Labels for gas containers



Figure 1-2 Continued from previous page.



USA - THIS SYSTEM CONFORMS TO ALL APPLICABLE STANDARDS OF THE RADIATION CONTROL FOR HEALTH AND SAFETY ACT OF 1988. COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO. 50 DATED JULY 26, 2001.




























USA - THIS SYSTEM CONFORMS TO ALL APPLICABLE STANDARDS OF THE RADIATION CONTROL FOR HEALTH AND SAFETY ACT OF 1988. COMPLIES WITH 21 CFR 1040.10 AND 1040.11 EXCEPT FOR DEVIATIONS PURSUANT TO LASER NOTICE NO. 50 DATED JULY 26, 2001.

Figure 1-2 Continued from previous page.

Figure 1-3 ICONS USED WITH THE CONSTELLATION® VISION SYSTEM

	AutoSert® Surgical Step
	Extrusion Surgical Step
	Forceps Surgical Step
	Fragmentation Surgical Step
	Irrigation/Aspiration Surgical Step
	Laser Surgical Step
	Phaco Surgical Step
	Scissors Surgical Step
	Viscous Fluid Control (VFC) Surgical Step
	Vitreotomy Surgical Step
	Expand Window

	Help Video
	Modify
	Power
	Save
AC ◀	AC In
AC ▶	AC Out
	Aiming Beam
	Air Pressure Input
	Auto Gas Filling (AGF)
	Alternating Current
	AutoSert® IOL Injector
CE/CE Ⓢ CE 0981 Ⓢ	CE mark to RTTE directive
CE 0123	CE mark to MD directive
	OSHA recognized NRTL, CSA mark, providing electrical safety certification to North American requirements for medical devices.

	OSHA recognized NRTL, TÜV SÜD America mark, providing electrical safety certification to North American requirements for medical devices.
	Coagulation Connector
	Connection Indicator
	Dangerous Voltage
	Dangerous Voltage (black symbol with yellow background)
	Dr. Filter
	Eject
	Equipotentiality
	Follow Instructions for Use (white figure with blue background)
	Footswitch
	Forceps
	Hot
	Caution: Consult accompanying documents
	General Warning (black symbol with yellow background)
	Illuminator



































	Intelligent Phaco
	I/O Data
	Key Switch
	Laser Connection
	Laser Emergency Stop Switch
	Laser Port 1
	Tethered Laser
	Magnetic Resonance Unsafe
	Manufacturer
	Multi-Function Port
	Network Connection
	Non-ionizing Radiation
	Off
	On
	Displays the Help selections
	Ready
	Regulatory Compliance Mark Australia

Figure 1-3 ICONS USED WITH THE *CONSTELLATION*® VISION SYSTEM. . . continued

	Remote Door Lamp Laser Status		U/S Handpiece Connector
	Remote Interlock		USB Connector
	Scissors Connector		Use appropriate take-back system
	Serial In/Out		Video Recorder Control
	Standby State		Viscous Fluid Control Connector
	System Fault		VGA Out
	System Information		Video In
	Type BF Equipment		Video Out
			Vitreous Cutter Connection

Screen Displays

For a complete listing of screen displays and description, refer to the Constellation Operator Manual. The following are the Operator Manual Reference Numbers.

Constellation (CA1) - 8065751025 (905-2120-001)

Constellation (CR2) - 8065751882 (905-2120-002)

Constellation (CR3) - 8065752231 (905-2120-003)

Constellation (CR4) - 8065752913 (905-2120-004)

SECTION TWO

THEORY OF OPERATION

Constellation* Vision System Overview

The *Constellation** Vision System can be used as a standalone tabletop system, or as a single monolith system when combined with the *Constellation** base.

The Console and Base are fastened together mechanically and electrically to create the monolith assembly. The Console and Base are connected together electrically (power, communication, power supply) with cables between each component's rear panel connectors, completing the monolith assembly. Optional modules are connected through the appropriate connector on either the Console or Base.

Following is a general overview of all the modules that make up the *Constellation** Vision System.

Console Power Module

The console power module distributes power through a single 24 VDC power bus. The power system as a whole is comprised of five major functional blocks:

- AC input
- Power conversion
- Power distribution
- Host battery backup including charger
- Dedicated host DC power converter module

The five blocks work together to convert a universal 90-264 VAC 50/60Hz input into a 24 VDC regulated power buss that meets the system's total power requirements.

Host Module

CA1/CR2

The Host module provides the computing platform for the host software and Graphical User Interface (GUI). It communicates system level controls to subsystems via the Supervisor module. The Host module is composed of the Flex-ATX motherboard assembly, Video Overlay PCI card, Wi-Fi PCBA - PCI card, two SATA hard disk drives, one DVD writeable drive, Host DC-DC Converter PCBA, Host Display Connector PCBA, Host Expansion Panel (containing the Upper and Lower Expansion PCBAs), and all required interface cables.

CR3

The Host module provides the computing platform for the host software and Graphical User Interface (GUI). It communicates system level controls to subsystems via the Supervisor module. The Host module is composed of the Flex-ATX motherboard assembly, HD Video Overlay PCI card, two SATA hard disk drives, one DVD writeable drive, Host DC-DC Converter PCBA, Host Display Connector PCBA, Host Expansion Panel (containing the Upper and Lower Expansion PCBAs), and all required interface cables.

The PC motherboard receives all necessary DC power (ATX Power Supply) from the Host DC-DC Converter board. The DC power for the hard

disk and DVD drives are also supplied by the same board. The PCI card receives power directly through its PCI slot connector.

The Expansion panel serves as a main user interface for external device connection from the rear side of CVS console. It has two rows of interface connectors as listed below for each system configuration:

CA1 / CR2

S-Video Out
 Comp Video Out
 S-Video In
 Comp Video In
 VGA Out
 Barcode Reader
 Ethernet+ Reset (Laser)
 USB
 Video Rec. Cont.
 Ethernet (Service)
 MP3 Input

CR3

USB (WiFi)
 HDMI In/Out
 S-Video In
 VGA Out
 Barcode Reader
 Ethernet+Reset (Laser)
 USB (Service)
 Video Rec. Cont.
 Ethernet (Service)
 MP3 Input

Display Module

The display module is the main user interface. The display module contains the LCD (display), and the touch screen which is the primary user input device. The display module's major components are the display assembly and pivot mechanism.

Supervisor Module

The supervisor module controls, arbitrates, and coordinates communications with all of the system's modules via an ethernet backbone and individual reset lines. The supervisor module provides:

- The means to receive input from the attached footswitch.
- Communication with the power system to control the power up sequence.
- The means to directly control the illuminator module via an electrical interface.

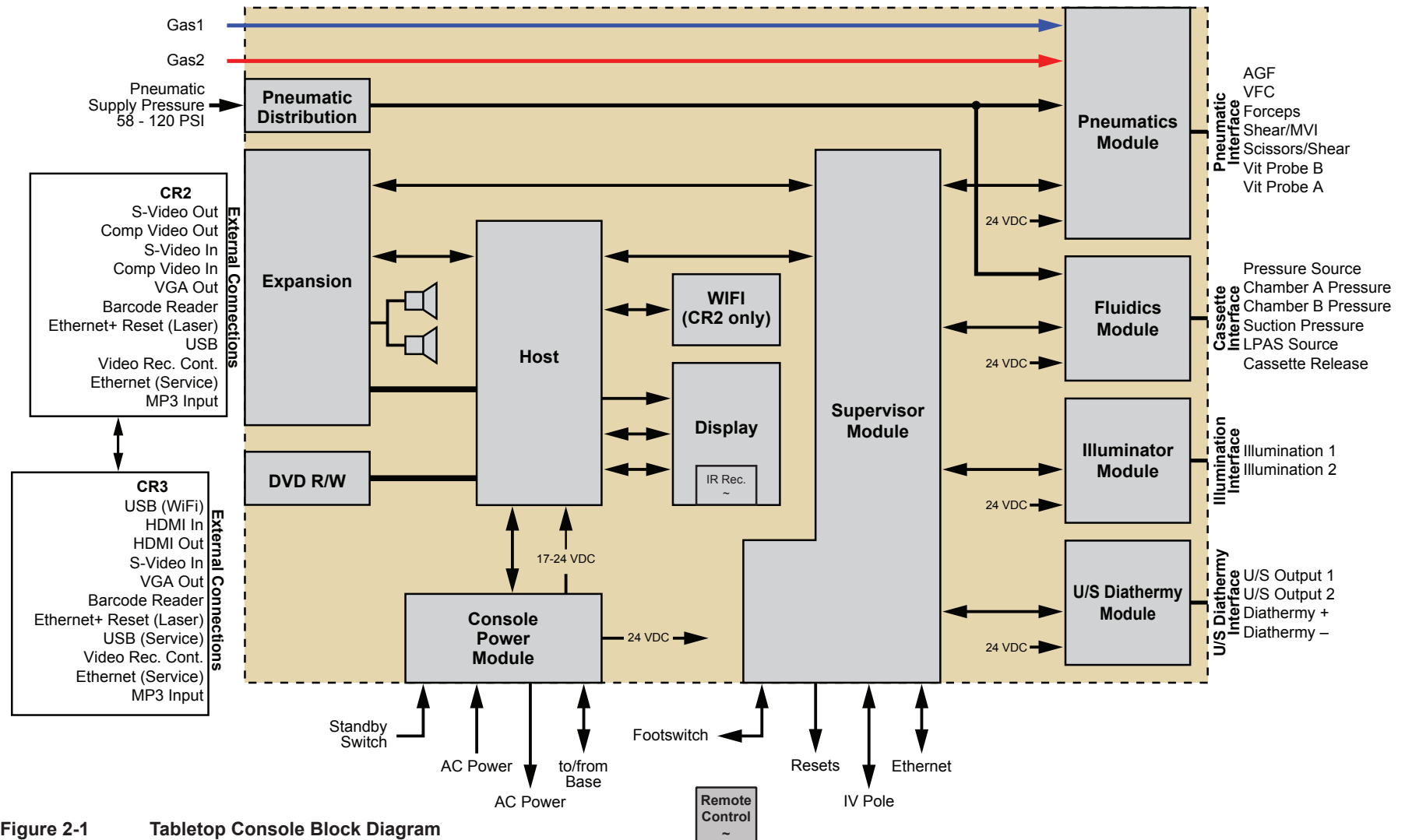


Figure 2-1 Tabletop Console Block Diagram

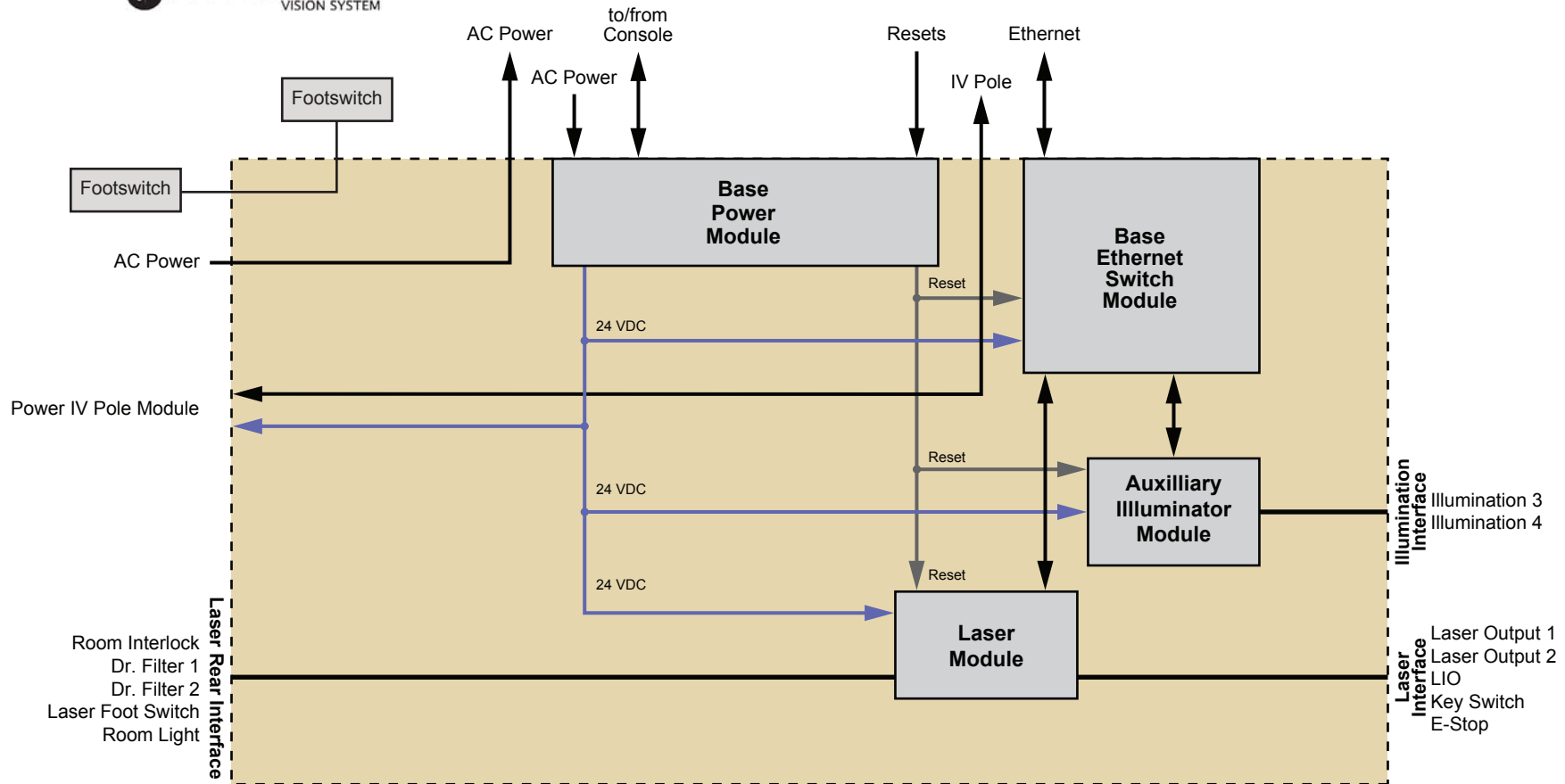


Figure 2-2 Base Console Block Diagram

Illuminator Module

The illuminator module is a bright light source which couples to an endo-illuminator probe to illuminate tissues in the eye. The illuminator module is equipped with fixed UV and IR filters to remove unwanted ultraviolet and infrared light energy. The module is controlled by the supervisor module.

Fluidics Module

The fluidics module is comprised of two major functional blocks: the individual fluidics cassette and the receiver mechanism. The receiver mechanism consists of the following:

- Cassette Clamp Mechanism – Provides mechanism for securing the fluidics cassette to the console's internal fluidics system.
- Cassette Valve Pincher Actuators – Provides actuation to control fluid inputs/outputs.

- Module Controller – Provides control and communication of various module functions.
- Non-Invasive Flow Sensor – Senses flow.
- Infusion and Aspiration Level Sensors – Used to determine cassette fluid levels.
- Cassette Detection Sensors – Used to detect the presence of a cassette.
- Cassette ID Sensors - Used to identify various cassette types.
- Drain Pump – Used to transfer fluid from cassette to drain bag.

- LPAS Pump – Generates pressure for infusion.
- Infusion Subsystem – Controls and provides pressure necessary to maintain infusion.
- Irrigation Subsystem – Controls irrigation levels.
- Aspiration Subsystem – Controls vacuum.

These 12 elements, plus the fluidics cassette, work together to provide the necessary infusion, irrigation, aspiration, and LPAS functionality required by the *Constellation** system.

Pneumatics Module

The pneumatics module is comprised of the following elements:

- Pneumatic Distribution - Distributes clean filtered supply of pneumatic source pressure to the pneumatics and fluidics modules. It also provides the point of connection for the console to the hospital supply pressure.
- Vit Probes Pressure Drive Ports - Provide pulsed pressure at a predetermined rate, duty-cycle, and pressure to drive pneumatic vitrectomy probes.
- Pneumatic Instruments Drive Ports - Provide either proportional pressure or pulsed pressure at a predetermined rate, duty-cycle, and pressure to drive pneumatic instruments such as forceps and scissors.
- Viscous Fluid Control Port - The VFC drive provides proportional pressure or vacuum to drive the VFC plunger to inject or extract viscous fluids.
- Auto-Gas Filling (AGF) Port - The auto-gas filling port provides the automatic function of filling the gas consumable with a gas tamponade.

U/S Diathermy Module

The U/S diathermy module provides the following functionality:

- Phaco and Frag Connectors - Provide the electric signals to drive the Phaco and Frag handpieces.
- Diathermy Connectors - Provide the electric signals to drive the diathermy and coagulation accessories.

Remote Control

The remote control provides a navigational interface remotely through the IR receiver.

Base Assembly (optional)

The base assembly provides the mounting platform for the table top console. The base assembly contains the following modules/functionalities:

- Base Ethernet Switch - Provided as an extension to the supervisor, and distributes ethernet and reset lines to the modules in the base assembly.
- Base Power Module - The base power module distributes power through a single 24 VDC power bus.

Tray Arm (optional)

The tray arm can be mounted on either the left or right side of the base. It provides a movable work surface for set-up and use during surgery.

Laser Module (optional)

The laser module converts 24 VDC input power into laser light at the output port where it is coupled to a fiber-optic handpiece cable. The laser rear interface provides the primary external interface to the laser module. It includes the room interlock, two Dr. filters, a laser footswitch connector, and room light connectors.

Auxiliary Illuminator Module (optional)

The auxiliary illuminator is a xenon light source which couples to an endo-illuminator probe to facilitate visualization of eye tissues. The auxiliary illuminator is equipped with fixed UV and IR filters to remove unwanted ultraviolet and infrared light energy.

• • • •

Power System

The *Constellation** Vision System uses a modular architecture. Each major machine function such as pneumatics or fluidics is controlled by a dedicated module. Power for all modules is provided by a single 24 VDC power bus distributed throughout the system. The host computer is an exception as it is uniquely powered from a dedicated power source which automatically derives energy from the 24 VDC bus or backup battery pack, as appropriate.

This power architecture eliminates line leakage stack ups from individual modules, relieving the requirement for a large, heavy, and costly isolation transformer. In a stand-alone table top configuration the system leakage is below 350 uA. The combined top and bottom consoles total a maximum leakage less than 500 uA.

The power system as a whole is comprised of five major functional blocks: AC input, power conversion, power distribution, host battery backup (including charger), and a dedicated host DC power converter module. The five blocks work together to convert a universal 90-264 VAC,

50/60 Hz input into a 24 VDC regulated power bus that meets the *Constellation** total system power requirements.

The table top (console) and monolith (console with base) configurations utilize the major functional blocks depicted in Figure 2-3. A brief description of each block follows.

- **AC Input**

The AC input block provides the interface between the AC power line and the AC to DC power conversion block. The AC input block consists of an AC power entry module, over-current

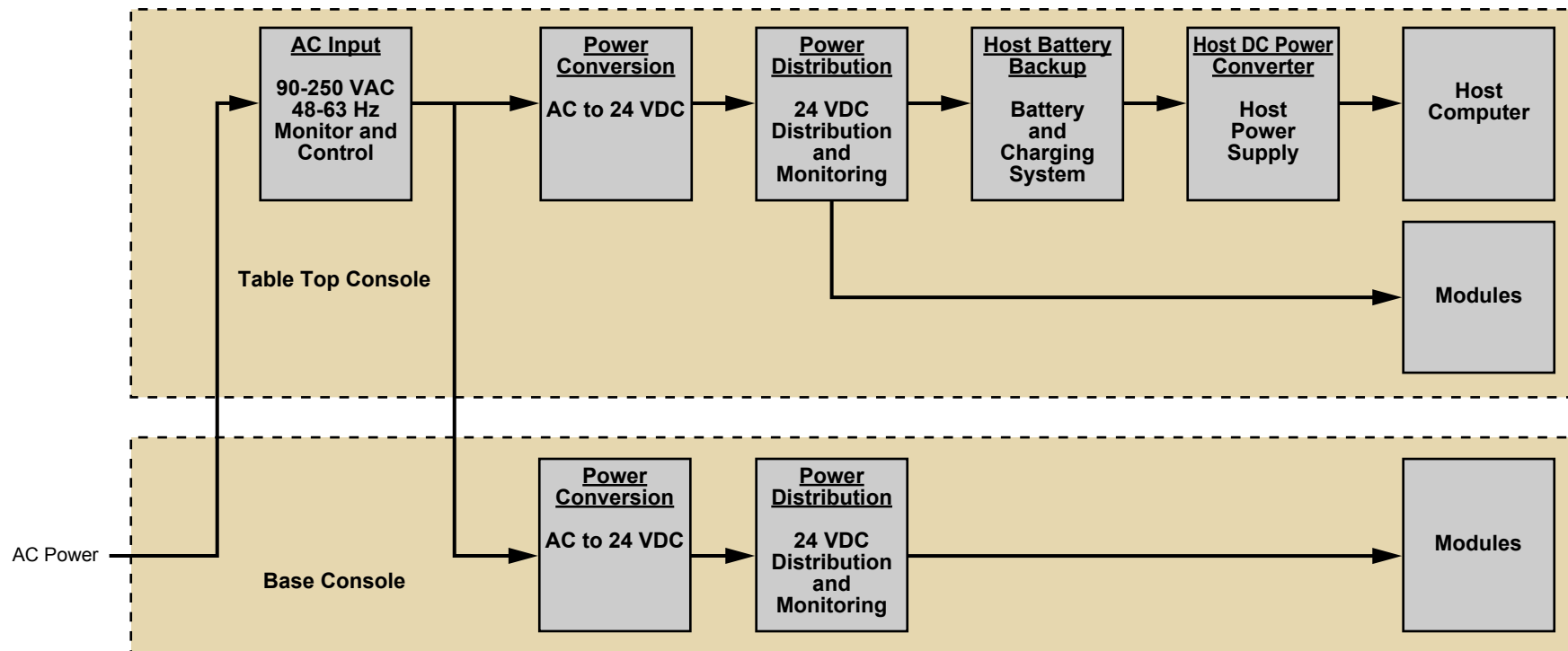


Figure 2-3 Five Major Power Functional Blocks

protection, EMI filter, and AC power distribution. The AC input block also includes AC voltage and current monitoring, and a serial communication port reporting results to a system supervisor.

- **Power Conversion**

The AC to DC power conversion block consists of a single 24 VDC, AC/DC main power supply with wide input range capability. This supply has two outputs: a main 24 VDC and a low power logic level standby output. The entire system can be put into a sleep-mode by powering down the main 24 VDC output via a remote shut off input. The main 24 VDC output defaults to an off state when the system is first plugged into AC power, and remains off until an operator activates a wake-up standby switch. A microcontroller in the power distribution block controls the power down sequence when a shut-down command is issued by the operator via the host computer.

- **Power Distribution**

The DC distribution block refers to the breakout of power to the individual modules. The main 24 VDC from each supply is brought on-board, then fanned out and distributed to the individual modules. Cable harnesses are used to connect the multiple 24 VDC output connectors to the individual modules. Additional circuitry is added to monitor voltage and current levels at key points throughout the board. Results are reported to the system supervisor.

- **Host Battery Backup**

A rechargeable Li-ion battery is included in the system as a backup power source. The battery backup provides a dual function. It acts as a

UPS, keeping the host alive if there is a loss of AC power, allowing for an orderly controlled shutdown of the host. It also provides power when the host is remotely commanded to wake up, permitting software upgrades to be downloaded without the need for AC power.

- **Host DC Power Converter**

The host computer is based on an Intel Pentium class processor with a hard drive, DVD, DVI video controller, sound, USB, etc. The host power module generates the voltages necessary to run the host computer and its peripherals. This module derives its power from either the 24 VDC bus, or from the backup battery, as required.

Console/Base Integration

In a fully integrated system, the console and base mate to provide the full feature *Constellation** system (monolith). In this configuration AC power enters the bottom console then is routed to the top. Once in the top console, AC is controlled and monitored, then distributed between the two consoles. To limit AC line in-rush current, the top and bottom power supplies are sequenced upon power up. The top console is first powered up, followed shortly by the base.

The 24 VDC power bus in the base is supported by its own dedicated power supply capable of delivering ample power to all base modules. The base's breakout board has minimal circuitry, and is generally used to fan out power to its modules.

Functional Block Description

An expanded power system block diagram showing a more-detailed signal flow is presented in Figure 2-4. The five major functional blocks discussed before are depicted by the shaded areas.

Along with the AC switching supplies and the backup battery pack, four circuit boards (AC Power, Power Controller, DC/DC Converter, and Bottom Power Distribution) constitute the full power system. An overview of each of the four PCB assemblies follows.

AC Inlet

For the monolith system, AC power enters the at the bottom of the base unit. The power is routed through the base to the top console AC inlet. (If the system is only the table top console, the power enters directly into the console's AC inlet.) The inlet incorporates a low leakage, high frequency, EMI filter. Power is then routed from the inlet receptacle to a combination On/Off rocker switch and thermal circuit breaker. From here the AC power is wired to the AC Power Board system level EMI filter.

AC Power PCB

The AC Power PCB performs three basic functions: AC power monitoring, AC power switching to base unit, and system EMI filtering.

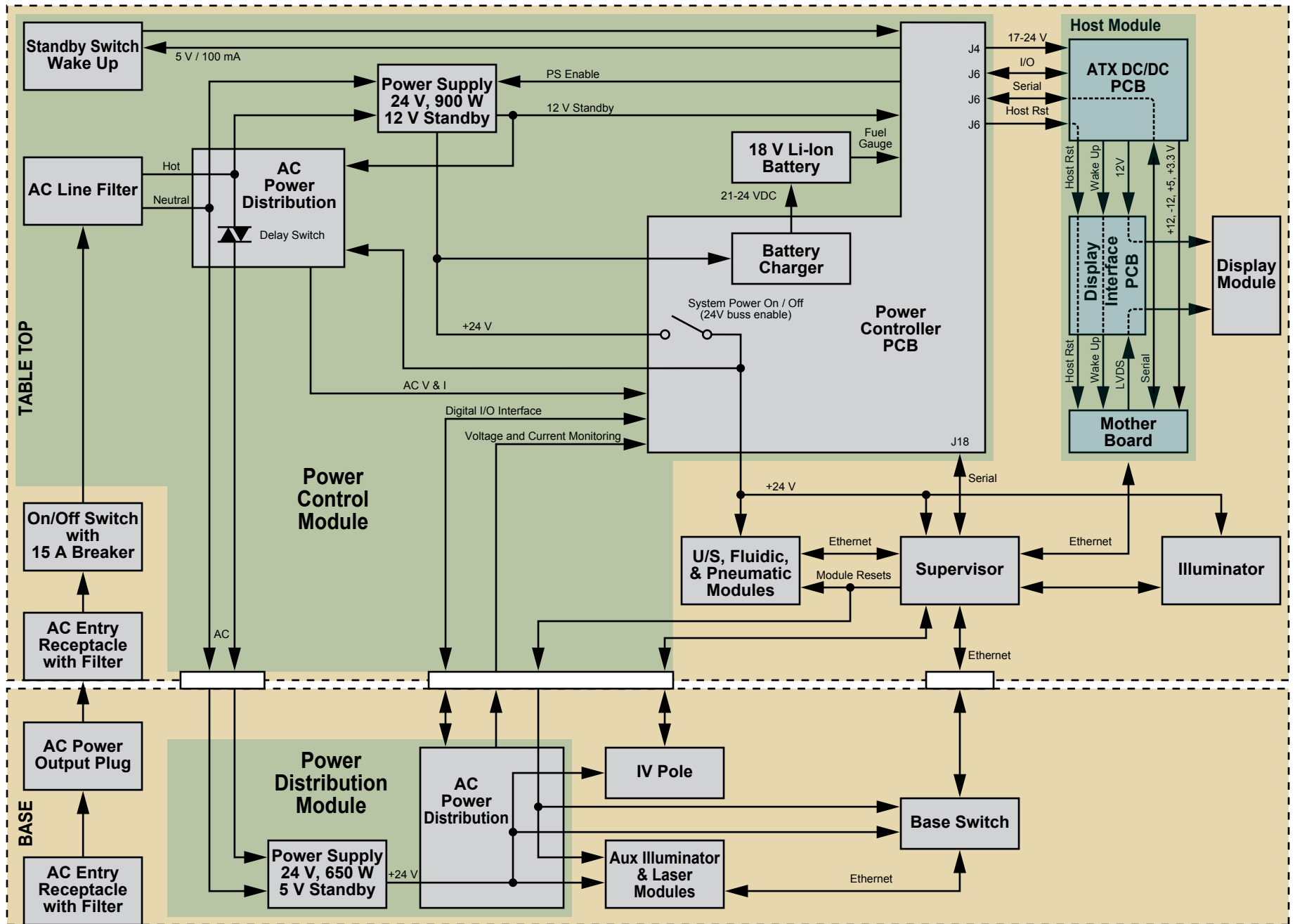


Figure 2-4 Power System Block Diagram

Power Controller PCB

As its name implies, the Power Controller PCB controls, monitors, and reports the status of the AC and DC power coming into the *Constellation** system, as well as the power being distributed to all the sytem's submodules.

Power States

The power system can reside in any one of six power states; battery-powered sleep mode, wall-powered standby mode, e-connectivity mode, UPS host back-up mode, and full system power-up mode (see Table 2-1).

Control Logic Power

For e-connectivity wake-up purposes, the system utilizes the PIC processor's real time clock capacity. In sleep mode the main switcher power supplies are powered down. If there is no AC power, power must be derived from the 21 V lithium back-up battery pack. To ensure a long shelf life, battery

drain must be limited below 1 mA, yielding about one year of operation before re-charge is required on an initially-full battery.

To conserve power in sleep mode, power is routed only to the PIC processor via a pair of back-to-back n-mosfets operating as a bi-directional power switch. A separate mosfet feeding all other logic is powered down. Steering diodes turn on the appropriate mosfets as various power sources are available; i.e., battery, standby, and host converter power.

In the event that the lithium battery is removed for servicing, a 1.5 Farad power capacitor keeps the real-time clock running for about one-half hour.

Standby Switcher Power

The top console switching power supply has a +12 V auxiliary standby power output, active when AC input is greater than 80 VAC. When the

auxiliary voltage is present at the input to the micro power switching regulator, the battery back-up feed is disconnected by a mosfet switch.

Lithium Back-up Battery Pack

A nominal 18.25 V smart lithium battery pack provides sleep mode power for the system, as well as acting as the back-up and e-connectivity power source for the system. The pack has a 4.3 ampere hour rating translating to about 20-30 minutes of host run time under back-up or e-connectivity operation. Integrated smart battery electronics within the pack provide battery gas gauging capacity, indicating the ampere hours of capacity remaining at any given time by coulomb counting both charge and discharge currents.

Communication to the battery is maintained via a SMBus data link (battery industry modified I2C). The link provides detailed pack information including state of charge, cell voltage, temperature, current, date of manufacture, etc. In addition to the data link, the pack incorporates a thermistor which provides additional hard wired protection against overheating if the data link fails.

The pack is easily replaced by disconnecting a 10 pin Molex minifit connector, and removing Velcro straps holding the pack in a cradle.

Lithium Pack Charge Control

The charger has the capacity to operate fully independently; however, all charging parameters are available to the PIC processor via the SMBus communication link to control. As a safety precaution, hard-wired resistor values limits maximum charge voltage and current to the battery pack, regardless of higher software commands.

Power State	Description
Battery-Powered Sleep Mode	When main AC power off, system real time clock battery powered.
Wall-Powered Standby Mode	When main AC power switch is on, AC switching supply is active. System operates in standby mode, drawing system power from switcher auxiliary output until system is commanded on.
E-Connectivity Mode	When main AC power switch off, and e-connectivity is self activated, host operates from battery power.
E-Connectivity Standby Power	When main AC power switch is on, and e-connectivity is self activated, AC supply and host are turned on. The rest of system is held off.
UPS Host Back-Up Mode	Upon loss of AC power, all modules go into an off fail-safe mode, with exception of host computer which remains active operating from battery power until Windows OS can be properly shut-down.
Full System Power-Up Mode	All power is derived from AC switching power supply.

Table 2-1 Power States

Likewise, the temperature of the battery pack is hard-wire monitored via a thermistor located in the pack. If cell temperatures are too high, the charger will terminate the charge.

Host DC/DC Converter Input

The power provided to the host DC/DC converter ranges from 16 to 24 volts, dependent on the power source. The source can originate from the AC switching supply or a low level battery pack.

Microprocessor

The microprocessor used onboard is a PIC 16-bit processor (PIC18F6527) clocked by an external 10 MHz oscillator. In sleep mode, to reduce power consumption, the clock is switched over to a slower 32.768 KHz external oscillator and internal 8 MHz clock. The oscillator is also used as a time base for the processor's real time clock.

All inputs are ESD and noise protected before entering the board, and all outputs are buffered before exiting. This includes ESD and noise protection on the I2C lines.

Host Interface

Communication to and from the host is included in a single 14-pin connector (see Table 2-2).

Base Console Interface

Communication to and from base console is in single 16-pin connector (see Table 2-3).

Top Console Fan Cooling

Based on the temperature reading from the sensor above, the top console system fan is speed controlled via a PWM signal from the PIC processor. A fan fail monitor IC (MAX6684)

monitors the fan's tach output signal. If the fan is not spinning for any reason, a fan fail signal is reported to the PIC.

The output lines to the fan are fully current-protected. If the output current exceeds one ampere, the gate of the output mosfet will be held low. As the PWM signal drops low, the latching circuitry is reset, thereby yielding a cycle-by-cycle self-resetting current limit.

Standby Switch

Under normal operation, the *Constellation** console is turned on by depressing the system standby switch located at the back of the machine. The switch glows orange while in system standby mode, and blue once the console is activated. The switch input is both ESD and noise protected.

Top 24 V Supply Interface

Other than the main +24 V output from the AC supply, three signals are connected to the Power

Signal	Functional Description
RX1 & TX1	Pseudo RS232 interface passing measurements and status to host. Host passes real time clock updates and programming to PIC.
Display Enable	Activates +12 V power to display. (Not active in e-connectivity mode.)
Host Soft Reset	Direct soft reset line to motherboard.
Host Shut Down	Signal originating in motherboard calling for shutdown of its own power supply.
Host Power Good	Signal from host DC/DC converter indicating all voltages are regulation.
0V Return	Common 0 V reference return.
Laser Reset	Pass thru signal from supervisor to external laser system for cabling efficiency.
Supervisor 0 V	Supervisor 0 V reference used by laser reset.
Back Light Level	PWM signal controlling back light level of display. (Level initiated from the host through RS232 link to PIC.)

Table 2-2 Host Interface Signals

Signal	Functional Description
+24V Bottom	24V signal from base power board to monitor +24V level at base.
24V I Bottom	+24V buss current level signal from Base PCB scaled at 0.1V / Amp.
0VRefAnalog Bottom	0V reference from bottom console / base Power PCB.
Base Present	Loop back signal to 0V indicating base console interface connector is engaged and base console is present.
0V Ref Top	0V reference from top console to base Power Distribution PCB.
Over Cur Bottom	Signal drives low if base Power Distribution PCB detects a load higher than 30 amps.
Bottom Power OK	Active low signal if base console +24V is in regulation.

Table 2-3 Base Console Interface Signals

Controller PCB. The AC Good signal indicates the supply has sufficient AC voltage to remain in regulation. The +24 V enable signal turns on the main +24 V supply output when driven to 0.0 volts. A high enable level turns the output off (standby mode). The third output is the standby auxiliary +12 V used to power the circuit board during standby mode.

Supervisor Interface

Communication between the PIC and Supervisor is through an opto-coupled pseudo RS232 interface to maximize the signal-to-noise ratio. In addition, the external laser reset line is passed through the controller for cable wiring efficiency.

Host DC/DC Converter and Interface PCB

The host DC/DC Converter and Signal Interface PCB performs two primary functions. The first role is providing all voltages necessary to operate the host computer and motherboard; as such, the DC/DC converter mimics a standard 150 Watt power supply. The second function the board provides is electrical safety isolation between the host computer, all of its I/O, and the *Constellation** internal electrical system. Isolation is necessary to meet safety agency requirements.

Communication lines between the host and *Constellation** system are included in a single 14-pin connector with the exception of the ethernet network line. Isolation in this instance is provided in the ethernet coupling transformer on each side of the ethernet cable.

The interface cable between the host DC/DC Converter PCB and Power Controller PCB has a one-to-one pin assignment (see Table 2-4).

Bottom Power Distribution PCB

The primary function of the Bottom Power Distribution PCB is to provide an interconnect platform for the AC and DC voltages distributed throughout the top *Constellation** console, as well as monitoring general environmental conditions of the base console, and reporting these to the top Power Controller PCB.

Top to Bottom Console Interface

A number of data lines are required to interconnect the top and bottom power boards (see Table 2-5).

• • • •

Signal	Functional Description
RX1 & TX1	Pseudo RS232 interface passing measurements and status to the Host. Host passes real time clock updates and programming to the PIC.
Display Enable	Activates +12V power to the display. (Not active in e-connectivity mode.)
Host Soft Reset	Direct soft reset line to the motherboard.
Host Shut Down	Signal originating in motherboard calling for shutdown of its own power supply.
Host Power Good	Signal from the Host DC/DC converter indicating that all voltages are regulation.
0V Return	Common 0V reference return.
Laser Reset	Pass thru signal from Supervisor to External Laser for efficiency in wire cabling.
Supervisor 0V	Supervisor 0V reference used by Laser Reset.
Back Light Level	PWM signal controlling the back light level of the display. (Level initiated from the Host thru the RS2323 link to the PIC).

Table 2-4 Host Interface Signals

Signal	Functional Description
Shield	Chassis ground line for cable shielding.
+24V Bottom	24V signal going to top console to monitor +24V power buss in base.
24V I Bottom	+24V buss current level signal from Base Board scaled at 0.1V / A.
0VRefAnalog Bottom	0V reference from bottom console / Base Power Board.
Base Present	Loop back signal to 0V indicating the bottom console interface connector is engaged and the bottom console is present.
0V Ref Top	0V reference from the top console to the Base Power Distribution Board.
Over Cur Bottom	Signal drives low if bottom Power Distribution PCB detects a load higher than 30 A.
Bottom Power OK	Active low signal if the base console +24V is in regulation.
Supervisor 0V Ref	Supervisor 0V reference used by reset signals routed to each module in base.
Reset 7-10	Reset lines 7 thru 10 routed to each module in the base.

Table 2-5 Top to Bottom Interface Signals

POWER UP SEQUENCE

1. With power cord plugged into AC outlet, turn On/Off rocker switch/breaker, located on rear of table top, to the ON position. The Power Controller PCB receives 12 V from the 900 W power supply and converts/sends 5 V / 100 mA to the standby.
2. Press the standby button to begin powering up the system. The button turns blue to indicate the boot sequence has begun.
3. The Power Controller PCB sends the PS enable signal to the 900 W power supply to allow 24 V to go through the battery charger to the 18 V Li-Ion battery and back to the Power Controller PCB which then delivers 24 V to the Host ATX DC/DC PCB through J4.
4. The ATX DC/DC PCB sends -12 V, +5 V, +3.3 V to the Motherboard. It also sends +12 V to the Display Module through the Display Interface PCB.
5. After a few minutes, the Host Module sends a message back to the Power Controller PCB through J6, triggering +24 V 900 W power supply to the table top modules, base and supervisor.
6. After the table top modules successfully report back to the Supervisor, and if Table Top is connected to a Base unit, a Host signal triggers the Base modules.
7. Once Table Top modules (and Base modules, if present) report back to the Supervisor, the Supervisor sends a message through the ethernet indicating it has taken control.

LOCATION	LED DESIGNATION	PURPOSE
Power Controller PCB	DS 9	"Standby" DS 9 turns green when Main AC toggle switch is in the ON position.
Power Controller PCB	DS 13	DS 13 turns green when an enable signal is sent to the Power Supply.
Power Controller PCB	DS 3	DS 3 turns green when 24 volts is released to the Controller PCB.
Power Controller PCB	DS 15	DS 15 turns green when 24 volts is sent from the Power Controller to the Host.
HOST DC-DC Converter PCB	DS 3	DS 3 turns green when the Host receives 24 volts.
HOST DC-DC Converter PCB	DS 6	DS6 turns green when the Host releases 5 volts and start pulse to Motherboard.
HOST DC-DC Converter PCB	DS 7	DS 7 turns green when the Motherboard receives +/- 12v, 5v & 3.3v.
HOST DC-DC Converter PCB	DS 12	DS12 turns green as +12 volts is delivered for backlights.
Power Controller PCB	DS 1	DS1 turns green as AC is released to Base.
Power Controller PCB	DS 17	DS 17 turns green as 24 volts from Base Power Supply is released to the Aux Illuminator and Laser.

Table 2-6 Power Controller and Host DC-DC Converter PCB LEDs
(Listed In Power Up Sequence)

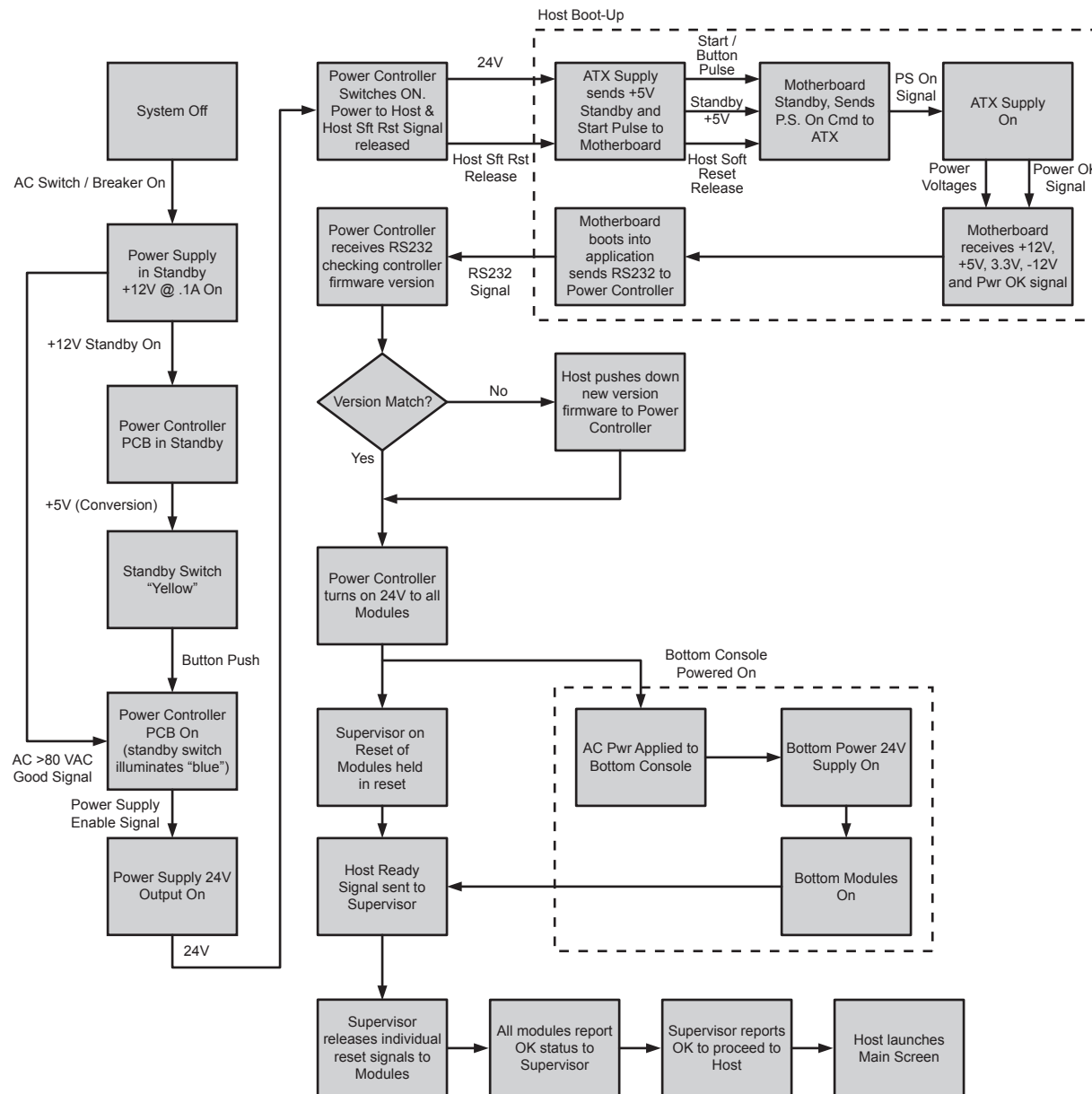


Figure 2-5 Power Up Sequence

Host & Expansion Panel

General Overview

The *Constellation** Host module provides the computing platform for the Host software and Graphical User Interface (GUI). It communicates system level controls to subsystems via the Supervisor module (see Figure 2-6 for CA1/CR2 systems and 2-7 for CR3 systems).

The Flex ATX Motherboard receives all necessary DC power (ATX power) from the Host DC-DC Converter PCBA, which also supplies DC power for the hard disks and DVD read/write drive. The PCI cards receive power directly through PCI slot connectors to perform specific functions of each board.

The Expansion Panel at the rear of the *Constellation** console serves as the main user interface for external device connections. The panel assembly contains upper and lower Expansion PCBA's, a Wi-Fi antenna cable connector (CA1 & CR2), HDMI In & Out (CR3), and other extension cables from the Host module's I/O connectors.

The Host module is composed of the following:

- Flex-ATX Motherboard
- VideOverlay PCBA - PCI (CA1/CR2)
- HD VideOverlay PCBA (CR3)
- Wi-Fi PCBA - PCI (CA1/CR2)
- Wi-Fi - USB (CR3)
- Two SATA hard disk drives
- DVD read/write drive
- Host DC-DC Converter PCBA
- Host Display Connector PCBA
- All required interface cables

FLEX ATX MOTHERBOARD

The Flex ATX Motherboard contains an *Intel*** Pentium M745 1.8 GHz CPU with cooling fan, and a 1 GB DDR SDRAM (two slots available). Two key components on the motherboard are:

- The *Intel*** 855GME Graphics and Memory Controller Hub (GMCH) is responsible for 24-bit LVDS, AGP/DVO, VGA graphics interface support, and 184-pin DDR333 memory.
- The *Intel*** 6300ESB I/O Controller Hub (ICH) supports 32-bit, 33 MHz PCI 2.2 bus connectors, 10/100 Ethernet port, ATA100, SATA150, USB, and Serial I/O interfaces.

The system BIOS on this board stores all the preferred configuration default settings so that when the CMOS loses its battery power, only the date and time information must be re-entered.

Display Interface

The motherboard has the ability for analog and digital display through an *Intel*** Extreme Graphics 2 controller.

- The analog display support is provided by a 350 MHz integrated 24-bit RAMDAC, and the VGA Monitor connector is located on the rear I/O as a 15-pin female D-sub connector for analog monitors up to 2048x1536 resolution at 75 Hz.
- The LVDS port supports single or dual channel LVDS with 18/24-bit open LDI up to UXGA panel resolution, and is located internally as a 40-pin ribbon connector. It connects to the Host Display Connector PCBA, then the LVDS signal is sent to the front panel LCD display.

Audio Interface

The Flex ATX Motherboard employs an AC97 version 2.3 subsystem using the Realtek ALC655 codec to support Line-In, Line-Out, Mic, and CDROM-In interfaces. Audio amplification of stereo sound input takes place on the Host DC-DC Converter PCBA and is sent to the two speakers.

Peripheral Interfaces (CA1/CR2)

The Flex ATX Motherboard has two serial ATA IDE interfaces, two parallel ATA IDE interfaces (only one used), s-video and composite video connectors, four serial RS-232 ports, four USB 2.0 ports (two external [only upper one used], two internal), ATA-66/100 support, PS/2 keyboard (not used) and mouse ports (not used).

Peripheral Interfaces (CR3)

The PC motherboard has four USB 2.0 ports (2 external, 2 internal), four serial (RS232) ports, two Serial ATA 150 IDE interfaces, two parallel ATA IDE interfaces with UMDA 33, ATA-66/100 support, PS/2 keyboard and mouse ports.

SERIAL ATA HARD DRIVE

Two SATA hard disk drives (SATA0 & SATA1) are used as non-removable storage devices for OS software, host software, GUI software, and to support the high-speed data transfer of 1.5 GB/s.

The two hard drives are configured as soft-RAID1 for its fault-tolerance benefit. The mirrored pair of two hard disks increases reliability exponentially over a single disk. Each hard drive contains a complete copy of the data and can be addressed independently.

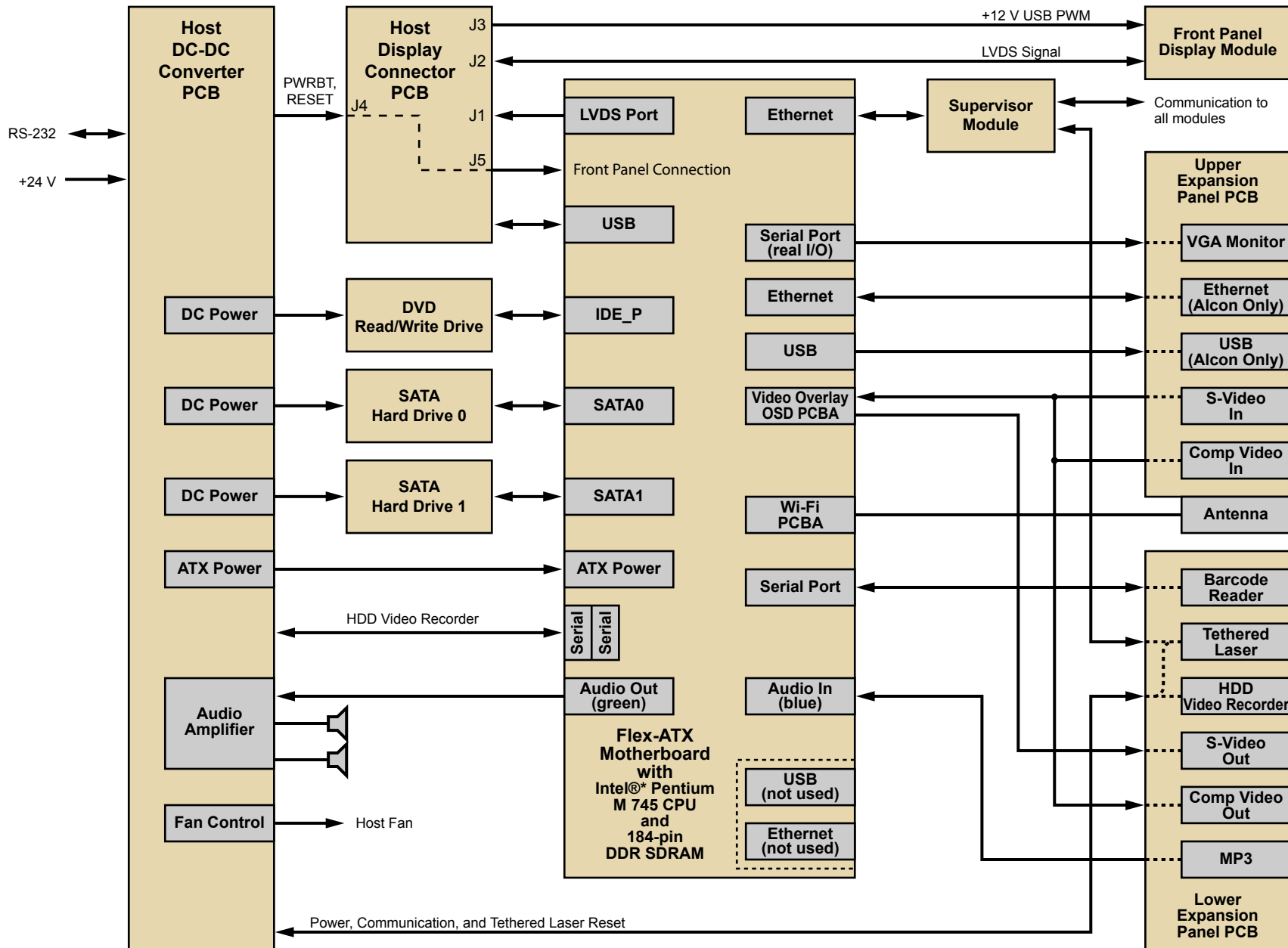


Figure 2-6 Host and Expansion Module Block Diagram (for CA1 and CR2 Systems)

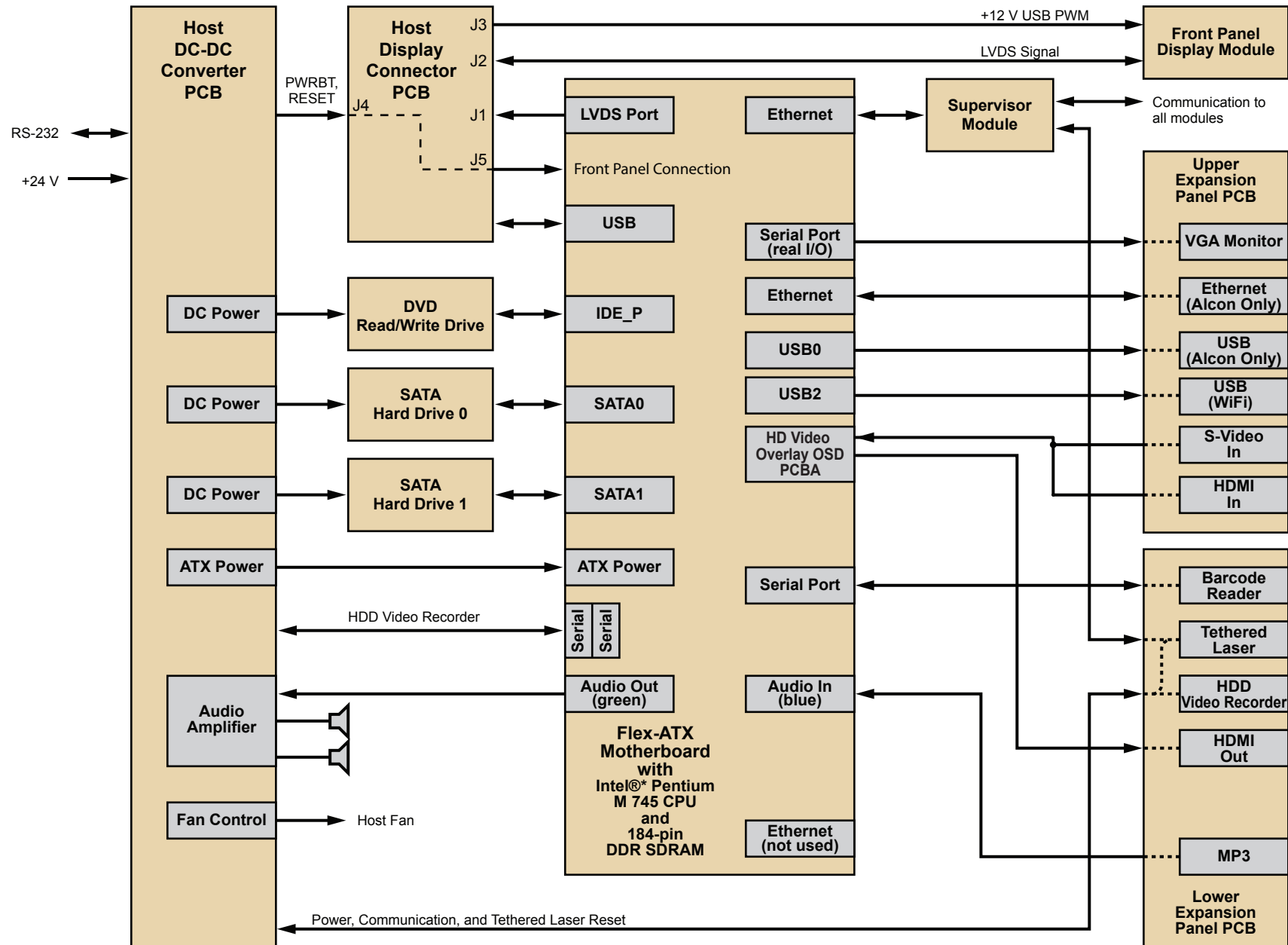


Figure 2-7 Host and Expansion Module Block Diagram (for CR3 Systems)

DVD BURNER

The DVD rewriteable drive is used to install software, and to back up system & data files. This removable data storage device is located on the mounting tray directly above the motherboard's CPU fan within the host enclosure. The drive is accessible from the rear of the console to load and unload a DVD disc.

The DVD drive is a 5.25-inch half-height internal ATAPI DVD writeable drive. This drive can read digital data stored on CD-ROM, CD-R, CD-RW, DVD-RAM, DVD-ROM, DVD-R, DVD-RW, DVD+R, DVD+RW and CD audio discs. It can record digital data on DVD-R, DVD-RW, DVD+R, DVD+RW, CD-R, and CD-RW discs. It supports the RPC II format.

VIDEO OVERLAY

For systems with standard resolution Video Overlay (CA1/CR2):

The Video Overlay Module (VOM) is comprised of two main components: a PCI card with video overlay capability (inside of Host module), and an external DVD recorder with RS-232 serial ports (recorder not supplied with *Constellation** system).

The VOM allows the user to add information (such as system status, settings, and parameters) to the live video being captured during the surgical procedure. This added data (text and graphics) is laid on top of the incoming video from the surgical scope. The resulting video/data can be viewed on an external monitor in real time and/or recorded using an external DVD recorder.

The video overlay function is implemented by an On Screen Display (OSD) PCI card, installed in a Host PCI slot. The OSD card has the capability to accept either an s-video or a composite video input in either PAL or NTSC format, and to output the combined video and overlay data in the same format as the incoming video.

For systems with High Definition Video Overlay (CR3):

The High Definition Video Overlay Module (HDVOM) allows the user to add information such as system status, settings, and parameters to the live video being captured during the surgical procedure. This added information is overlaid as a layer of text and graphics on top of the layer of incoming video from the surgical scope. The resulting video with the overlaid data is accessible to be viewed on an external monitor in realtime, and to be recorded using an external DVD recorder.

The HD video overlay function is implemented using an OSD (On Screen Display) PCI card, installed in the Host PCI slot. The OSD card has the capability to accept either an S-video (in either the PAL or NTSC formats) or a HD video input (up to 1080p 60Hz rates), add video overlay with 256 levels of transparency (the CVS product specification only requires 16 levels of transparency), and output the combined video and overlay data in either 1080i or 1080p format.

External DVD Recording

DVD recording of the output video can be accomplished using an external real time DVD recorder (such as the Sony DVO). The

*Constellation** system provides a dedicated RS-232 port (REC), accessible by the user via the expansion panel, to control Start/Stop recording of the external DVD recorder, which can be controlled using the footswitch. This feature requires the external recorder to provide an RS-232 port with remote start/stop capability.

BARCODE READER

Barcoding is a type of Morse code used to encode information into a universally-recognized code language in the form of a barcode pattern. The barcode reader decodes a barcode by shining a light source across the barcode and measuring the intensity of light reflected back by the barcode. The pattern of reflected light is detected with a photodiode, which produces an electronic signal that exactly matches the printed barcode pattern. This signal is then decoded and transmitted to the *Constellation** application software. A barcode system consists of a barcode printer, barcode labels for identification, scanning equipment for data collection, a database for barcode data analysis, and relay.

A handheld laser scanner is used to scan the barcode labels that are printed on each consumable pak.

The *Constellation** system provides barcode reading capability via a dedicated barcode reader connector on the expansion panel (|||||). The handheld reader scans the product's barcode label and transmits the raw data to the Host module. The data processing software decodes the product identification and compares it with the product database, allowing the product information to aid

in system setup, keep track of products used during procedures, keep metrics, and keep inventory of products used. Once each consumable pak is scanned, it enables the *Constellation** system to set itself up accordingly and offer on-screen help information to the OR staff.

WIRELESS HARDWARE

Wireless PCI Adapter (CA1/CR2)

The Wi-Fi card (Wireless-G PCI card) is used in the *Constellation** system for wireless network connectivity with the internet, printer, and other future applications, utilizing its external antenna. The Wi-Fi card operates in the 2.4 GHz frequency spectrum with throughput of up to 54 Mb/s in Wireless-G mode.

It complies with IEEE 802.11g standards and is backwards-compatible with IEEE 802.11b products.

USB Wireless Network Adapter (CR3)

The USB wireless network adapter is used to allow the system to have wireless network connectivity to access the internet and share files (and other resources) with other computers on the network. The device operates in the 2.4GHz frequency spectrum with throughput of up to 150Mbps in Wireless-N mode.

It complies with IEEE 802.11n standards and is backwards compatible with IEEE 802.11b and 802.11g (11Mbps and 54Mbps, respectively) products.

OPERATIONAL DESCRIPTION

The Host module is a custom computer designed to meet the requirements of the *Constellation** Vision System. It is comprised of several PCBA's, including OEM boards and storage devices, and interconnecting cables in the Host enclosure chassis. The chassis is equipped with a cooling fan/duct cover on the top.

The Expansion Panel assembly is basically an extension platform of the Host module's signal ports for various applications. Two Alcon custom PCBA's (Lower and Upper Expansion) are included in the Expansion Panel assembly along with the associated extension cables.

HOST DISPLAY CONNECTOR PCBA

The Host Display Connector PCBA is basically a connector interface board that distributes signals and power between the Host DC-DC Converter PCBA, Motherboard, and Front Panel Display Module.

LVDS Video Signal Interface

The Host Display Connector PCBA receives two channels (A, B) of LVDS data & clock signal pairs and supply voltage (+5 V) for the flat panel from the Motherboard's LVDS port via a 40-pin flat ribbon cable. These signals are routed to a 26-pin connector (J2) so that the LVDS cable can be connected from outside of the Host enclosure for easy cable installation to the Front Panel Display Module.

Display Power Signal Interface

The Host Display Connector PCBA receives 12 V backlight inverter input power and the backlight brightness control (PWM) signal from the Host

DC-DC Converter PCBA via connector J4. These signals are routed to a 14-pin connector (J3) so that the LVDS cable can be connected from outside of the Host enclosure for easy cable installation to the Front Panel Display Module. Two signals (PWRBT, RSTIN) from the Host DC-DC Converter PCBA enter the Host Display Connector PCB at J4 and are passed through connector J5 to the Motherboard.

The Host Display Connector PCBA also relays a separate +12 V input power via the LVDS port ribbon cable to supply the power to the Host Front Panel PCBA in the Front Panel Display Module as input power for the circuitry.

The Host Display Connector PCBA relays USB signal pairs from the Host PC's front panel connector through connector J3.

UPPER EXPANSION PCBA

The Upper Expansion PCBA provides an external I/O interface between the Host module and external devices. The PCBA is mounted in the upper section of the expansion panel to support the top row of I/O connectors at the rear of the console.

Analog Display

The analog display signal from the Motherboard serial port on the rear I/O connects to the external VGA Monitor 15-pin female connector.

Two transient voltage suppression (TVS) diode arrays are used both on the analog and digital signal lines for electrostatic discharge (ESD) protection of the I/O data lines. This device has an array of surge rated diodes with internal TVS diode. During transient conditions, the steering

diodes direct the transient to either the positive side of the power supply line or to ground. The internal TVS diode prevents over-voltage on the power line, protecting any downstream components. The TVS device has a typical capacitance of 3 pF, and operates with virtually no insertion loss to 1 GHz.

Ethernet Port

The Ethernet port on Upper Expansion PCB is not used at this time.

USB Connector (CA1/CR2)

The USB 2.0 signal from the Motherboard (using top port only) connects to the external USB-A receptacle connector which is normally blocked externally and is available for Alcon service personnel use only. One TVS diode array is used on each USB signal pair for ESD protection. The TVS device has a typical capacitance of 3pF and operates with no insertion loss to 1GHz.

USB Connector (CR3)

The PCBA passes through USB 2.0 signals from the Host PC's two USB ports on the rear I/O to the two external USB connectors which are USB-A receptacle connectors. One connector is normally blocked externally and is available for Alcon service personnel use only. The other connector has the USB wireless network adapter attached and retained by a holder that can only be removed with tools.

One TVS diode array is used on each USB signal pair for ESD protection. The TVS device has a typical capacitance of 3pF and operates with no insertion loss to 1GHz.

Video Overlay (CA1/CR2)

The Video Overlay PCBA can accept two types of signals (S-Video or Comp Video). The external connectors are a 4-pin Mini-DIN connector for S-Video In, and a 75-ohm BNC jack for Composite In. The S-Video Out and Composite Video Out connectors are located on the Lower Expansion PCBA. However, the composite video out signal is relayed through the same cable as the S-Video In and Composite Video In signals. Two TVS diode arrays are used on these video signals for ESD protection. The TVS device has a typical capacitance of 3pF and operates with no insertion loss to 1GHz.

Video Overlay Input (CR3)

The Upper Expansion PCBA passes through incoming video signals from the OSD (HD Video Overlay) card's inputs residing in the Host module. This external connector is a 4-pin Mini-DIN connector for S-Video In connection. Two TVS diode arrays are used on these video signals for ESD protection. The TVS device has a typical capacitance of 3pF and operates with no insertion loss to 1GHz.

Wi-Fi Antenna (CA1/CR2)

The external antenna connects directly to the Wi-Fi PCBA on the Motherboard. Although not physically a part of the Upper Expansion PCBA, externally it is located in-line with the upper expansion panel external connectors.

LOWER EXPANSION PCBA

The Lower Expansion PCBA is used to provide an external I/O interface between the Host module and external devices. The PCBA is mounted in the lower section of the expansion panel to support the bottom row of I/O connectors at the rear of the console.

Barcode Reader Interface

The Motherboard serial port supplies both the signal and +5V which are relayed through a 9-pin female D-sub connector to the external Barcode Reader. The external connector was selected so that it would not be used as a normal serial port; therefore, an RS-232 cable cannot be mistakenly connected to this port. This port will only work with the Barcode Reader with a custom interface cable that has been identified for the *Constellation** system.

Two bidirectional TVS array (SMDA15C) are used on all RS232 signal lines for ESD protection of the I/O data lines. "SMDA15C" is a bidirectional device and is designed for use on lines where the normal operating voltage is above and below ground level.

Ethernet Port: Tethered Laser Interface

Ethernet signals from the Supervisor PCBA are received through an 8-pin RJ-45 connector. This connector is used for Tethered Laser console connection only via a Cat-5 cable. The signal pin assignments of this connector were selected so that any PC connected to the system, if attempted, will not be able to communicate with, or cause any damage to, the console.

The laser reset (LSR_RST) signal is received from the Host DC-DC Converter PCBA and routed to one of the connector pins. This connector has an internal transformer with 1.5KV dielectric withstanding capability and common mode chokes for filtering. The TVS diode arrays are used on TX+/TX-, RX+/RX- signal pairs and Laser control signals (LSR_SNS, LSR_RST) for ESD protection. The TVS device has a typical capacitance of 3pF and operates with no insertion loss to 1GHz.

HDD Video Recorder

The external Video Recorder receives its signal via a serial port from the Motherboard to the Host DC-DC Converter PCBA, which is then routed to the 9-pin male D-sub connector. This connector is basically a serial RS-232 port, and is primarily used for the external HDD video recorder.

Two bidirectional TVS array (SMDA15C) are used on all RS232 signal lines for ESD protection of the I/O data lines. “SMDA15C” is a bidirectional device and is designed for use on lines where the normal operating voltage is above and below ground level.

MP3 Audio

The Lower Expansion PCBA receives MP3 audio signal inputs through a 3.5mm stereo jack from an external audio player. These signals are then routed to the Motherboard’s Audio In connector on the rear I/O. The signal is routed from the Motherboard’s Audio Out connector to the Host DC-DC Converter PCBA where it is amplified and sent to the two speakers.

Two single line TVS diodes (SD05C) are used on these audio signals for ESD protection. “SD05C” is a bidirectional TVS diode with working voltage of 5volts and is used on lines where the signal polarity is above and below ground level.

VIDEO OVERLAY INPUT/OUTPUT

Video Overlay (CA1/CR2)

The Video Overlay PCBA sends two types of signals (S-Video and Comp Video). The external connectors are a 4-pin Mini-DIN connector for S-Video Out, and a 75-ohm BNC jack for Composite Out. The S-Video In and Composite Video In connectors are located on the Upper Expansion PCBA. The S-Video Out signal has its own individual connector to the Video Overlay PCBA (lower port). Although the Composite Video Out is physically located on the lower Expansion PCBA, its signal is routed through the same cable as the S-Video In and Composite Video In signals that are located in the Upper Expansion Panel PCBA.

The two TVS diode arrays are used on these video signals for ESD protection. The TVS device has a typical capacitance of 3pF and operates with no insertion loss to 1GHz.

HD Video Overlay (CR3)

Two cables are routed directly from the Expansion Panel to the Host Motherboard. These are the incoming and outgoing HD video signals from the OSD (HD Video Overlay) card’s inputs residing in the Host module. These external connectors are an HDMI connector for HD Video In connection and an HDMI connector for HD Video Out connection.

• • • •

Supervisor

GENERAL DESCRIPTION

The *Constellation** Supervisor serves as a central clearinghouse of information and real-time control for the other modules in the system. The supervisor is comprised of a number of key elements (see Figure 2-8).

Kernel

The kernel is common to all intelligent *Constellation** modules. It includes: PowerPC microprocessor and embedded peripherals, flash memory, SDRAM, FPGA, CPLD, ADC's, and DAC's.

Ethernet Switch

All intelligent modules in the system, including the supervisor itself and host, connect through this 100BASE-TX ethernet switch IC. The host PC only communicates with the supervisor directly, while all other modules communicate only with the supervisor. The ethernet switch, although residing on the Supervisor PCBA, is more or less autonomous. Other than a software-controlled reset line, the ethernet switch does not receive any command or control from the supervisor's processor. To the ethernet switch, the supervisor processor is just another client (module).

Table Top Illuminator Interface

The supervisor directly controls the table-top Illuminator assembly. This consists of turning control lines on and off, and reading back status information.

Footswitch Interface

The supervisor directly controls the footswitch assembly. This includes not only reading treadle and button status, but providing drive current for the treadle's feedback motor.

I/V Pole Interface

The supervisor directly controls the power IV pole assembly. Unlike the footswitch, the supervisor merely sends commands and reads status from the power IV pole assembly. The supervisor does not run the motor directly; this is handled by the Power IV Pole PCB.

RS-232

The kernel portion of the supervisor provides an RS-232 port for connection to a debug terminal. This port is for development only, and is not accessible when in-system.

Module Reset Lines

The supervisor has the capability to individually reset each intelligent module. This is done at power-up and, if required, for hazard mitigation. If a module does not reset within the specified time, an advisory or warning will appear and the particular module will not be available.

Asynchronous Serial - Power Control Serial Port

The supervisor communicates with the Power Control PCB through an opto-isolated asynchronous serial interface. The supervisor reports system temperatures to the Power Control PCB which changes system fan settings in response.

Power Conditioner

The power conditioner provides current-limiting and soft-start capability to the module. During a soft-start, the host operating system remains active, but the application software and power to the modules are reset in approximately 40 seconds.

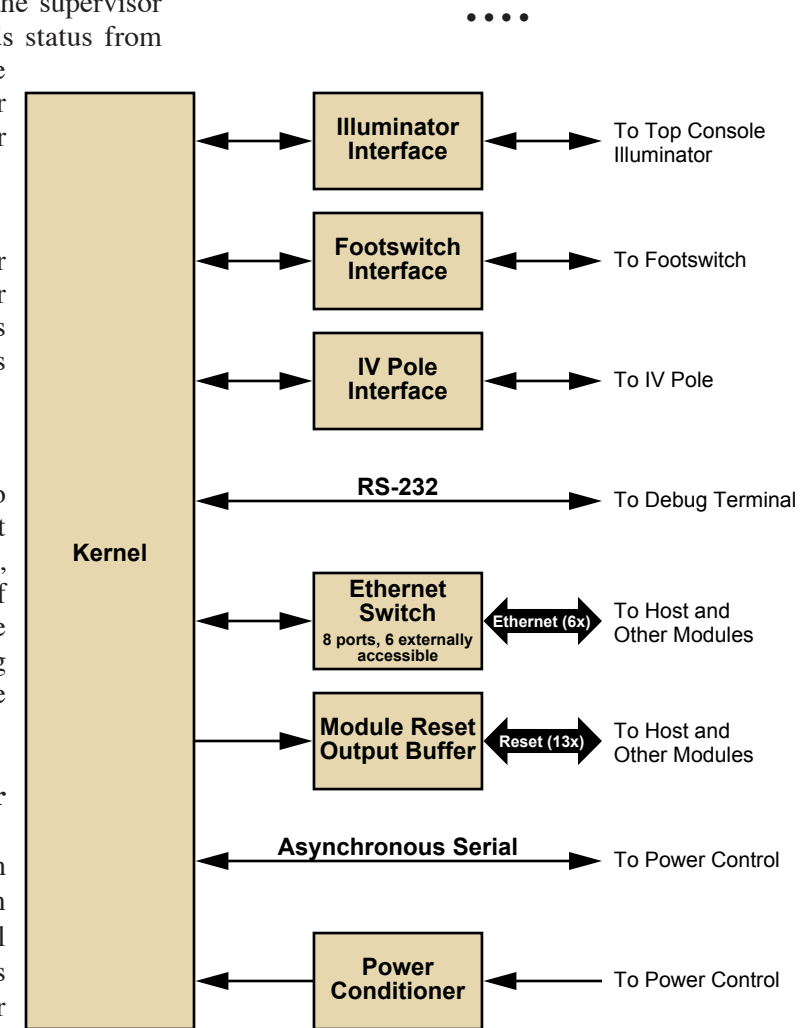


Figure 2-8

Supervisor Block Diagram

Front Panel Display

The front panel display is the main user interface of the *Constellation** system. It has an LCD which displays the system Graphical User Interface (GUI), and a touch screen which is the primary user input device for the system.

The front panel display's major components are the display assembly and the pivot mechanism. The display can be manipulated left and right, and tilted up and down, to accommodate different user positions.

Figure 2-9 is a block diagram of the PCBAs & other electrical components used in the front panel display module, and interconnection scheme of the hardware. Figures 2-10 is a block diagram of the front panel display module communications.

Display Assembly

The primary components of the display assembly are an LCD, a touch screen, and a pair of Infrared (IR) receivers. The assembly also contains a Display Interface PCB, an SD Card Reader PCB, a Backlight Inverter PCB, and two IR Sensor PCB's. The LCD and Display Interface PCB are each connected to the host module via their own dedicated cables. Additional internal cables connect the other boards to the Display Interface PCB. Enclosures and a frame hold these components in place, and faraday shields are used to suppress radiated emissions (EMI) to and from the boards.

LCD

A 17-inch color TFT-LCD is used as the GUI display. The LCD employs an integral Cold

Cathode Fluorescent Lamp (CCFL) backlight system, and is driven by LVDS display signals from the LVDS port in the host PC computer. This thin, lightweight display uses little power, and has a 17.0 inch diagonally-measured active area with SXGA resolution (1280 by 1024 pixel array).

Two power inputs are required for this LCD; one to power the LCD electronics and to drive the TFT array & liquid crystal, and a second to power the CCFL which is generated by an inverter. A 30-pin connector is used for the LVDS signal & LCD power interface. Two channels (odd / even) of pixel data signal pairs are required to drive this LCD.

Touch Screen

A 17-inch, 8-wire, resistive touch screen is mounted directly in front of the LCD. This is the primary user input device for operating the system.

Backlight Inverter PCB

The Backlight Inverter PCB receives +12 V from the host module via the Display Interface PCB and converts it to high frequency of 69-75 kHz, 530 - 730 Vrms (CR2-old display) or 45-55 kHz and 480-720 Vrms (CR3-new display), to ignite and operate the LCD's CCFL lamps.

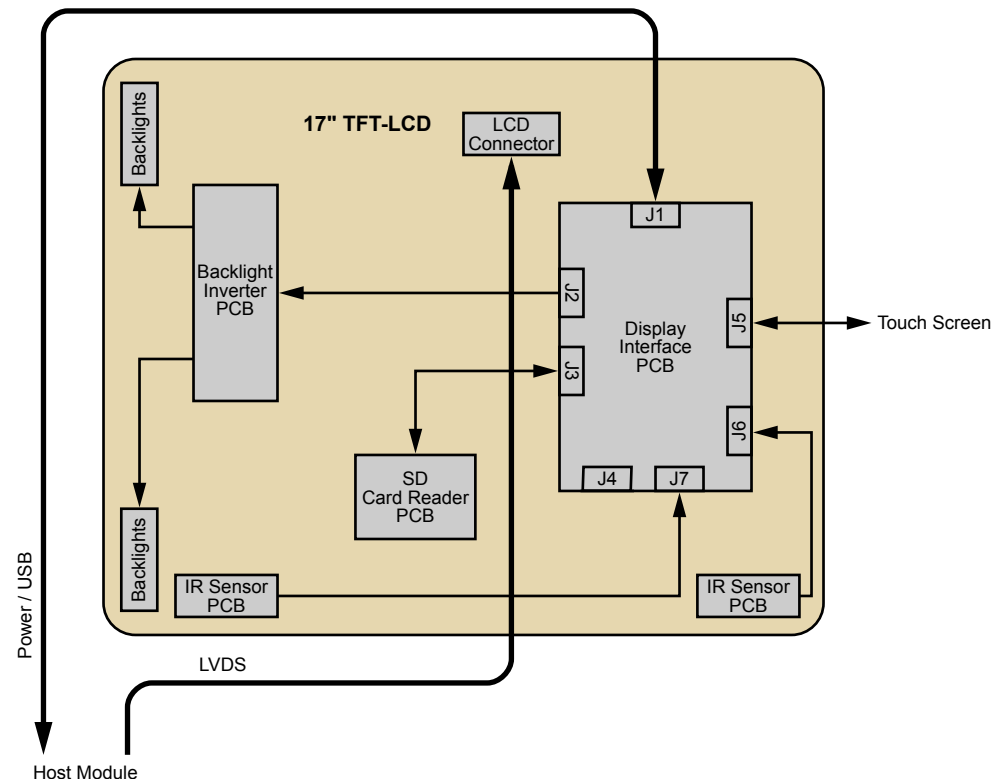


Figure 2-9 Front Panel Display Module Interconnection

The inverter includes a dimming input that allows brightness control from either a DC voltage source or a PWM signal. The maximum output current is externally programmable over a range of 5 to 8 mA to let the inverter properly match the LCD panel lamp current specification.

IR Sensor PCB

The display assembly also houses two IR Sensor PCB's and interface cables. The *Constellation** system utilizes the same IR Sensor PCB as Alcon's *Infiniti** system; however, the angle of the IR sensor chip has been modified to be parallel with the PCB surface. Two of these boards are mounted in the front lower corners of the display.

Display Interface PCB

The Display Interface PCB receives power, USB, and other control signals from the host module, and allocates the signals to the appropriate PCB's. It interfaces with the Backlight Inverter PCB to supply DC power (+12 V) and send backlight control signals. This board has two USB connectors; one for the SD card reader and the other is a spare.

This PCB has an on-board, high-speed, USB hub controller circuit using Amtel's AT43301-AU at U4. This device supports data transfer at high-speed (480 Mbit/s), full-speed (12 Mbit/s), and low-speed (1.5 Mbit/s). The upstream-facing port is connected to a USB 2.0 host, therefore U4 operates as a full-speed USB hub. The vendor ID, product ID, and string descriptors on the hub are supplied by the internal ROM. Analog over-current detection has been inhibited by connecting OC_N pins to +5 V, even though U4 supports over-current protection mode.

The touch screen control function is provided by Hampshire's HU10-100S0o touch screen controller ASIC chip (U6). This device is a USB-based, 10-bit resolution, touch screen controller to support screen types of 4, 5 and 8 wires. Currently, the Display Interface PCB is designed to support 8-wire resistive touch screen. Transient voltage suppressors (TVS) are added to the excite lines (X+, X-, Y+, Y-) near interface connector J5 to prevent ESD damage to the IC from touching the screen.

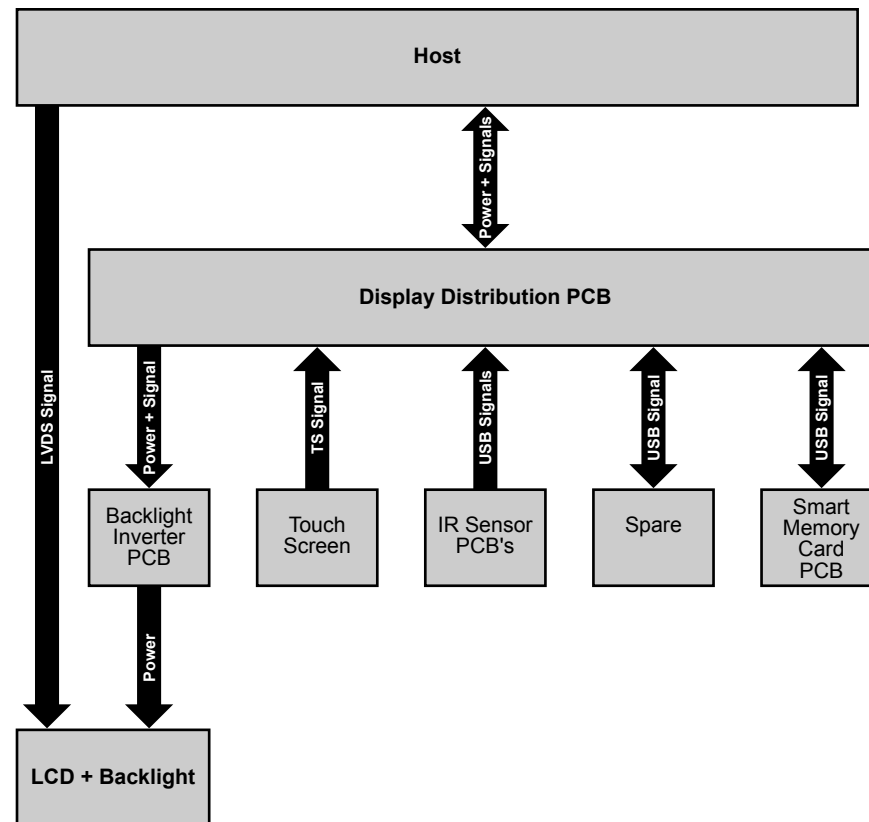


Figure 2-10 Front Panel Display Module Communications

The IR receiver circuit design on the Display Interface PCB is the same as the IR Receiver PCB design used in Alcon's *Infiniti** system. The received pulse train of remote control transmission signal is converted into USB signals by peripheral controller device AN2131QC, and is sent to the host module.

SD Card Reader PCB

The SD Card Reader PCB interfaces with the Display Interface PCB to receive power and USB signals. There is an on-board Low Dropout (LDO) regulator circuit to generate +3.3 V from the +5 V supply.

The USB 2.0 SD card reader controller has all I/O signals to support SD1.1 flash card specification, and has built-in 2.5 V regulator output to be used as core power for the device.

The SD memory card reader is located at the bottom of the front display panel. Its connector is a reverse mount type so the card can be inserted into the slot with the label facing upward.

Operational Description

The front panel display serves several functions. It displays images processed from the host and GUI software. It houses a touch screen which acts as the primary user input device. It receives signals from the remote control, and sends these signals to the host for processing. The front panel display module provides a card slot for Secure Digital (SD) memory card reader functionality.

Display Image Processing

The host software commands that LVDS video signals to be sent from the LDVS port on the host PC motherboard to the display module. These signals travel through a dedicated LVDS cable directly to the LCD module where they are interpreted and displayed on the GUI.

Touch Screen Operation

A finger press generates analog signals from the resistive touch screen. These analog signals travel to the touch screen controller circuitry on the Display Interface PCB where they are converted into USB signals. The USB signals are then routed to the host to work in conjunction with the software to recognize the touch point to activated corresponding system parameters.

IR Receiver Operation

The IR Sensor PCB's read signals transmitted from the remote control. These signals travel to the IR receiver circuitry where they are converted into USB signals. The USB signals are then routed to the host to work in conjunction with the software to control system parameters.

SD Card Reader Operation

Data can be read from, or written to, a SD memory card placed in the slot in the lower center of the display face.

Cable Routing

Primary Cabling

Two primary cables are connected from the host through the pivot arm assembly and into the display assembly. The first of these cables carries the LVDS signals from the host module directly to the LCD, and the other cable carries power, USB, and control signals from the host module to J1 on the Display Interface PCB.

Both of these cables run from the display assembly through the pivot mechanism and out to the host. The arm assembly has channels to enclose the cables, and each joint is open in the center so the cables may pass through. As the display is manipulated, and each joint is rotated, the cables must twist to follow the motion of the pivot mechanism. The cables have strain relief at the display and at the tabletop so that the twisting can be absorbed over the longest possible length of cable. Additionally, a ground strap is routed through the same path as the primary cabling, grounding the display chassis to the console chassis.

Interior Cabling

Several smaller cables carry signals from the Display Interface PCB to other PCB's in the display module. A pigtail from the touch screen is connected to the Display Interface PCB. Another pair of cables runs from the Display Interface PCB to the IR Sensor PCB's. Yet another cable connects the Display Interface PCB to the SD Card Reader PCB.

• • • •

Fluidics Module

The *Constellation** system uses a modular architecture. The Fluidics submodule is connected to the rest of the system through the 24 VDC system power bus, an ethernet connection, reset and slot ID signals, and a high pressure pneumatic air supply provided by the Pneumatics submodule.

The Fluidics submodule is comprised of two main functional blocks: the cassette and the receiver mechanism. The receiver mechanism consists of twelve functional blocks.

- Cassette Clamp Mechanism
- Cassette Valve Pincher Actuators
- Module Controller
- Non-Invasive Flow Sensor
- Infusion and Aspiration Level Sensors
- Cassette Detection Sensors
- Cassette ID Sensors
- Drain Pump
- LPAS Pump
- Infusion Subsystem
- Irrigation Subsystem
- Extraction Subsystem

These twelve blocks work together to provide the necessary infusion, irrigation, and suction functionality.

To aid in understanding the following written descriptions, block diagrams of the pneumatic system and Fluidics PCB partition are shown in Figures 2-11 through 2-16.

Cassette

The cassette provides direct control of infusion, irrigation, and aspiration fluids. It filters the air provided by the LPAS to ensure that no contamination reaches the patient during operation of pressurized infusion and irrigation functions. The cassette is a consumable assembly that contains pinch valves, flow channels, fluid chambers, a pump section, and clamping features for retention by the receiver mechanism. It will ultimately be available in several configurations; each designed to meet the specific requirements for posterior, anterior, and combined surgical case types.

The premium combined cassette is capable of providing all the functions needed to perform anterior, posterior, and combined surgeries. A drain bag attached to the cassette fills with aspirated waste fluid. The premium cassette provides fluid aspiration and pressurized fluid, filtered air, or infusion to the eye at a constant intraocular pressure independent of aspiration flow rates during posterior segment surgery. The infusion fluid source to the cassette can be changed during a procedure without interruption or re-priming the tubing from the cassette to the infusion cannula.

The Basic (gravity) and Day use cassettes provide fluid aspiration and fluid, or unfiltered air, infusion to the machine with on/off control. They do not provide pressurized infusion, IOP control, or infusion fluid source changes without re-priming.

Receiver Mechanism

The receiver mechanism is housed in the table top console. It provides control of the cassette features listed in above. The receiver mechanism is fully

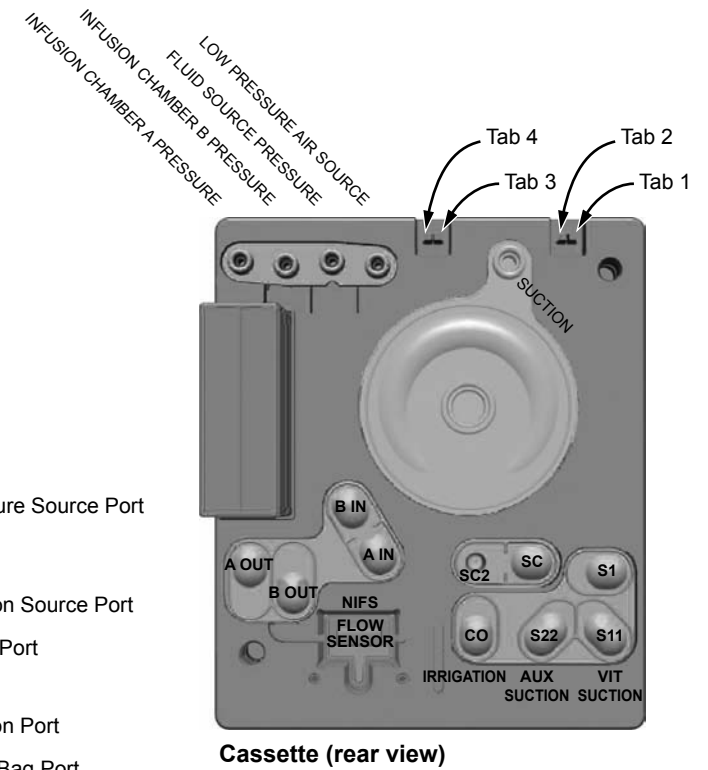
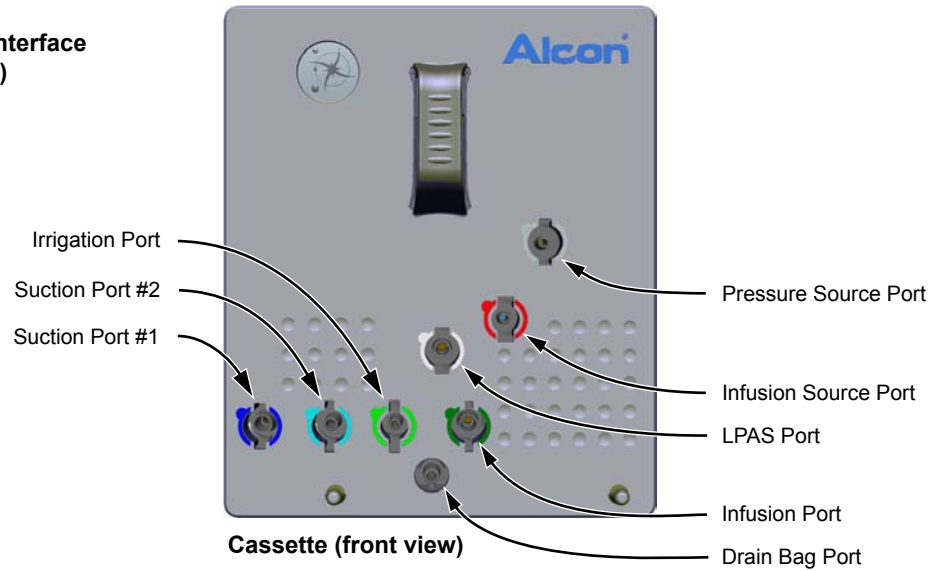
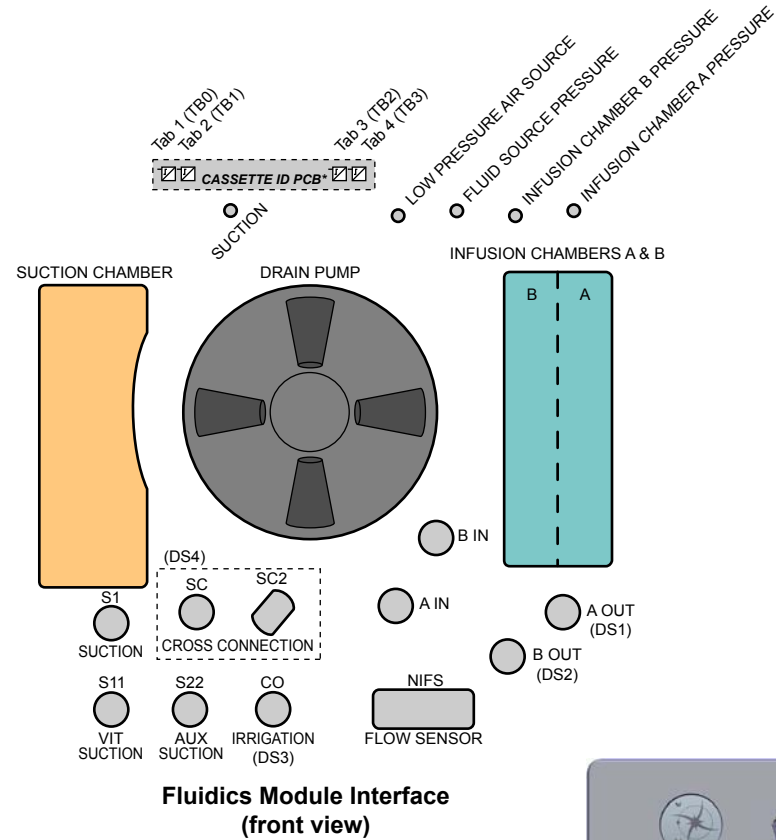
functional with all cassette configurations. The functional blocks of the receiver mechanism are described below.

Cassette Clamp Mechanism

The cassette clamp mechanism retains the cassette in the receiver module during a surgical case. It consists of a pneumatic cylinder, a linkage mechanism, clamping jaws, on/off solenoid valves, and a release mechanism. The cylinder is driven by the on/off valves, which are supplied with regulated pneumatic distribution air. Together, these components provide the motion and force necessary to either clamp a cassette or release it. The release of the cassette is commanded by pushing a button on the front of the submodule, which activates an infrared optical sensor under software control. A mechanical release is available to eject the cassette when electrical power or pneumatic supply to the submodule is turned off. The Fluidics system also contains dual optical sensors for detecting cassette presence, and four optical sensors for determining the type of cassette inserted.

Cassette Valve Pincher Actuators

The cassette valve pincher actuators are pneumatic cylinders with special tips on the rods, which contact the valve bubbles on the rear side of the cassette. When the actuators are extended, they compress the valve bubble and close it, thus stopping flow across the valve. There are two types of actuators: a normally-retracted type, which is spring-loaded to return to the retracted position when pressure is removed, and a normally-extended type, which is spring-loaded to return to the extended position when pressure is removed. The type of actuator for each valve bubble is determined by the safe-state requirement for that



COMPONENT DESCRIPTION

TYPE	NUMBER	FUNCTION	LOCATION	LAST USED
AC = ACCUMULATOR	1	F = FLOW	A[I][O] = INFUSION CIRCUIT A [IN][OUT]	AC4
CV = CHECK VALVE	2	I = ISOLATION	B[I][O] = INFUSION CIRCUIT B [IN][OUT]	CV1
CY = CYLINDER	3	IN = INTAKE	BA = INFUSION BACKUP	CY12
DS = INTERRUPT SENSOR	ETC	L = LEVEL	CO = IRRIGATION	DS7
ES = HALL EFFECT SENSOR		P = PRESSURE	C[L][U][R] = CASSETTE [LWR][UPR][RELEASE]	ES1
L = SOLENOID VALVE		S = POSITION	D = DRAIN PUMP	L20
MF = MUFFLER		V = VENT	E = SOURCE PRESSURIZATION	MF2
MT = MEASURING TRANSDUCER			F = F/AX	MT12
P = PUMP			I = INFUSION SUPPLY	P2
PV = PROPORTIONAL VALVE			L[O][C] = LATCH [OPEN][CLOSED]	PV9
RG = REGULATOR			N = NIFS	RG5
RO = RESTRICTIVE ORIFICE			P = PINCHER SUPPLY	RO2
RV = RELIEF VALVE			R = REFLUX	RV3
T = TUBING			S = SUCTION	T7
TP = TEST POINT			SC = CROSS CONNECTION	TP5
V = VENTURI			SY = SYSTEM SUPPLY	V1

Figure 2-11 Fluidics Faceplate Interface

FLUIDICS MODULE OVERVIEW WITH CASSETTE INTERFACE

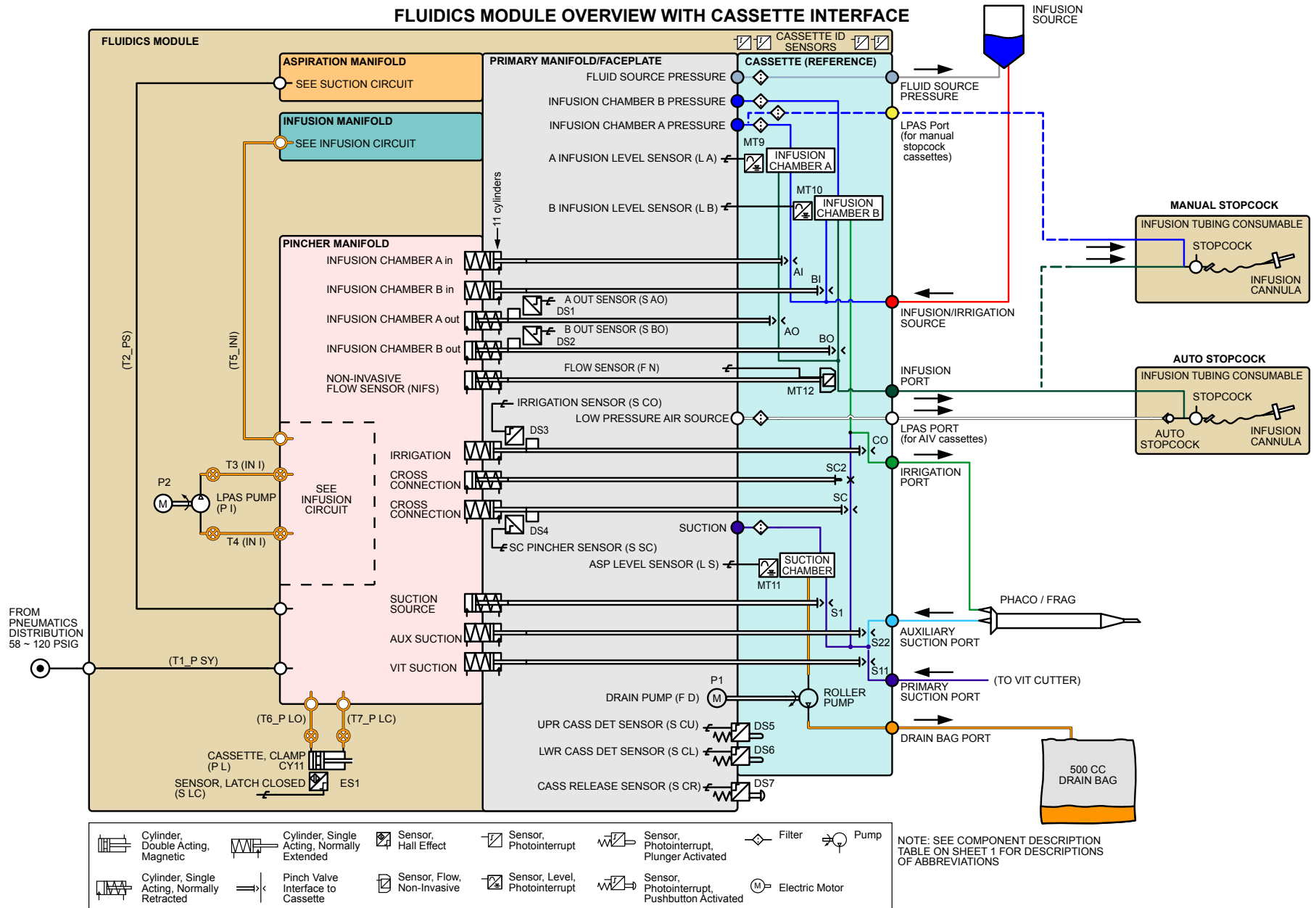


Figure 2-12 Fluidics External Connections

INFUSION CIRCUIT

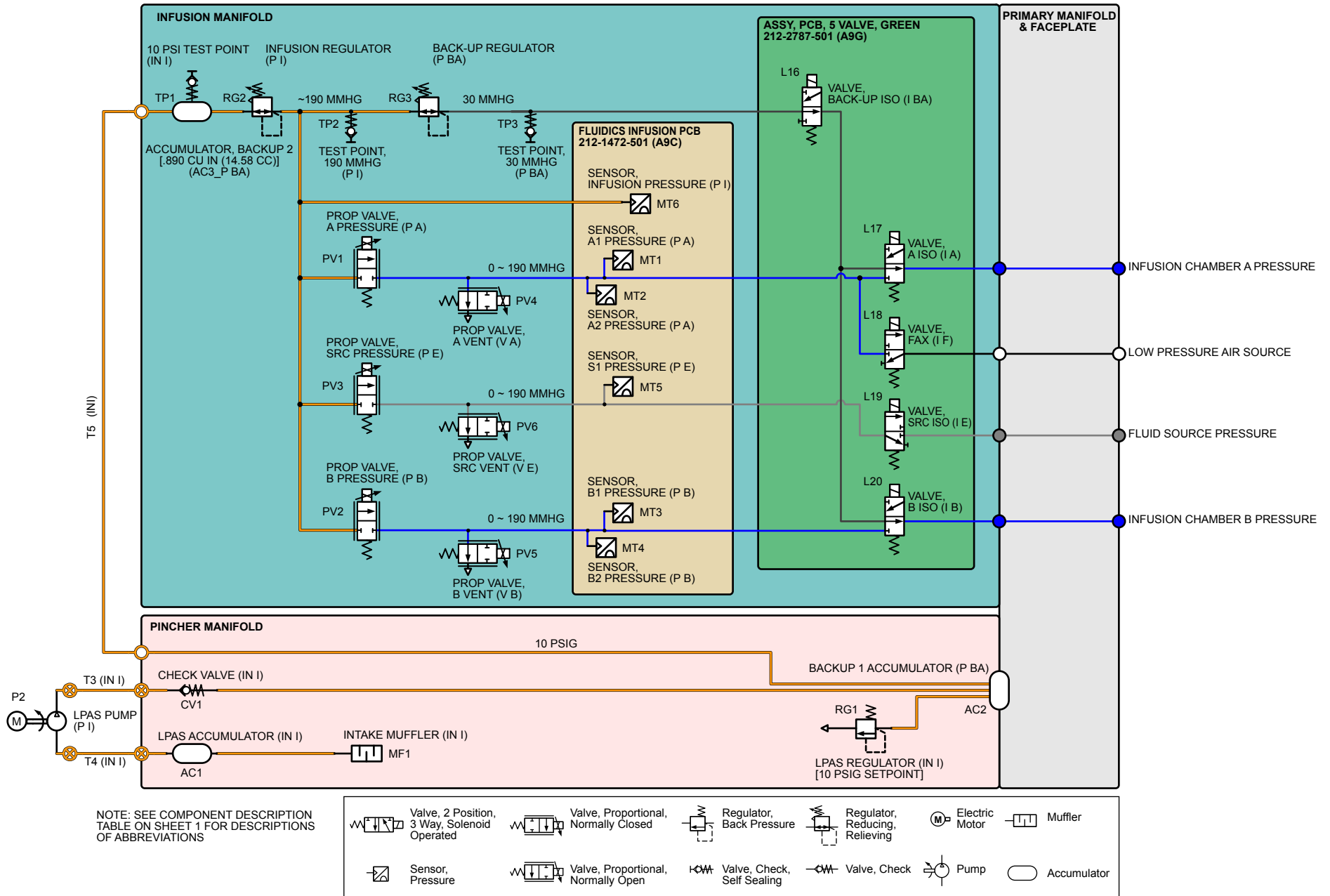


Figure 2-13 Fluidics Infusion Circuit

SUCTION CIRCUIT

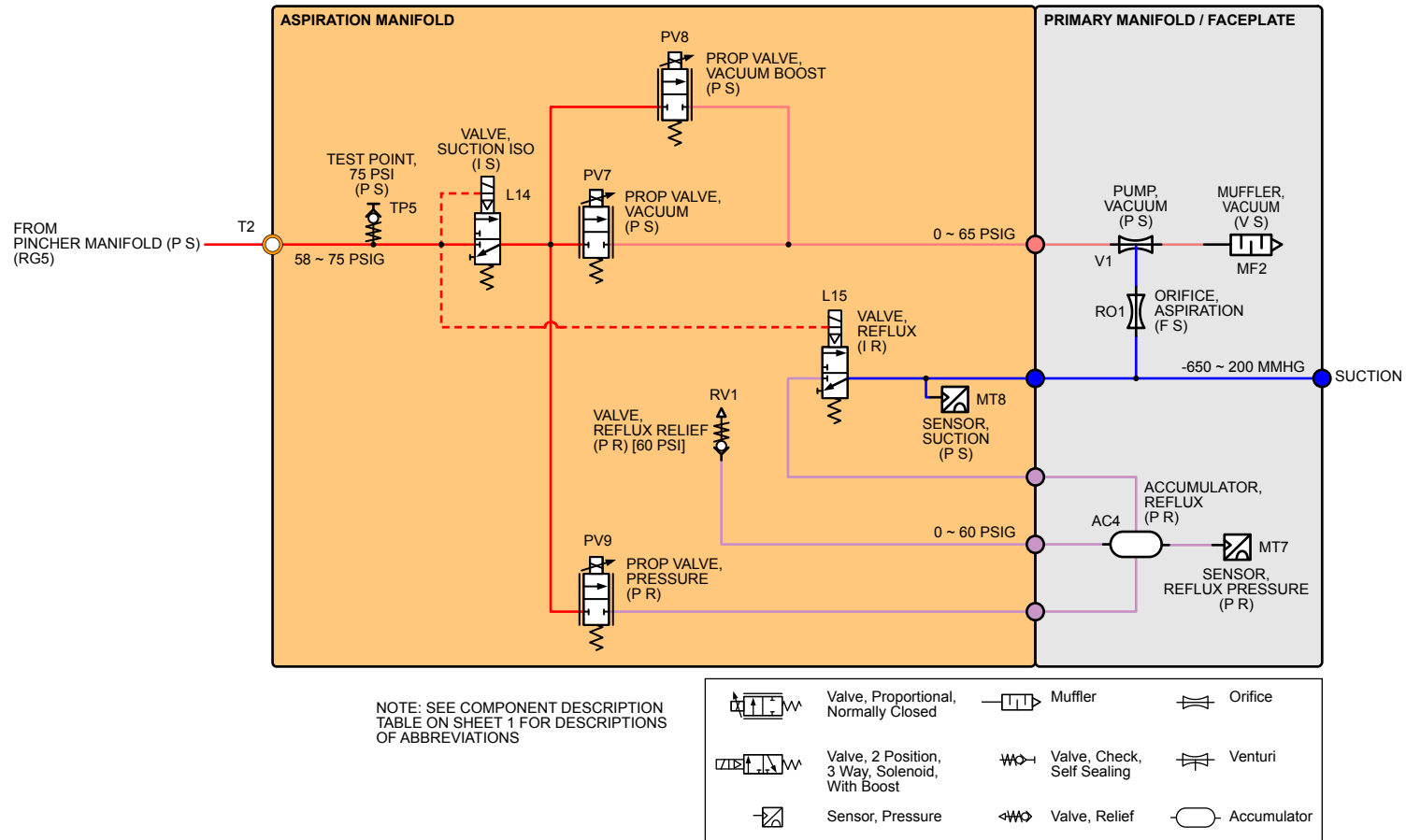


Figure 2-14 Fluidics Aspiration Circuit

PINCHER CIRCUIT

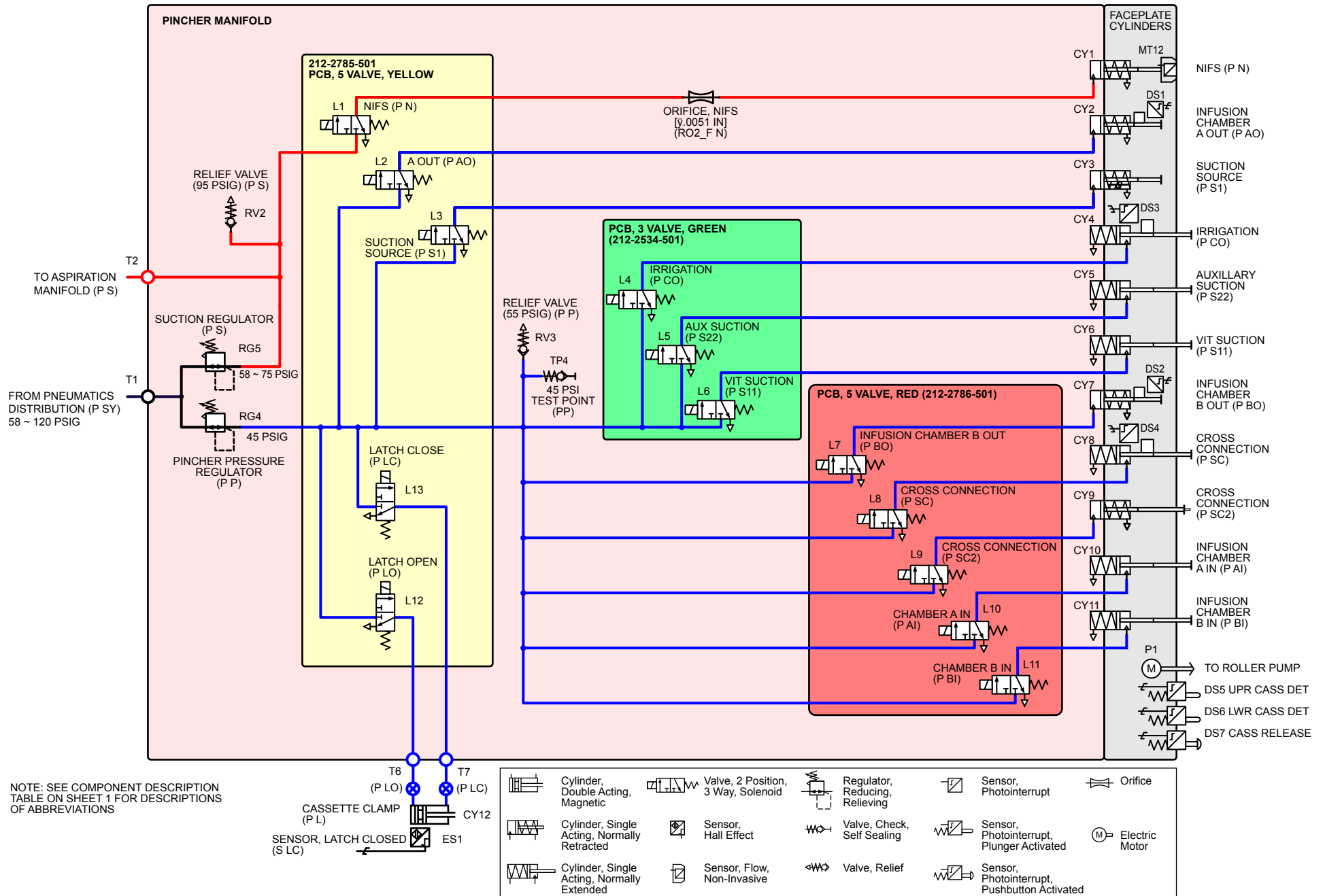


Figure 2-15 Fluidics Pincher Circuit

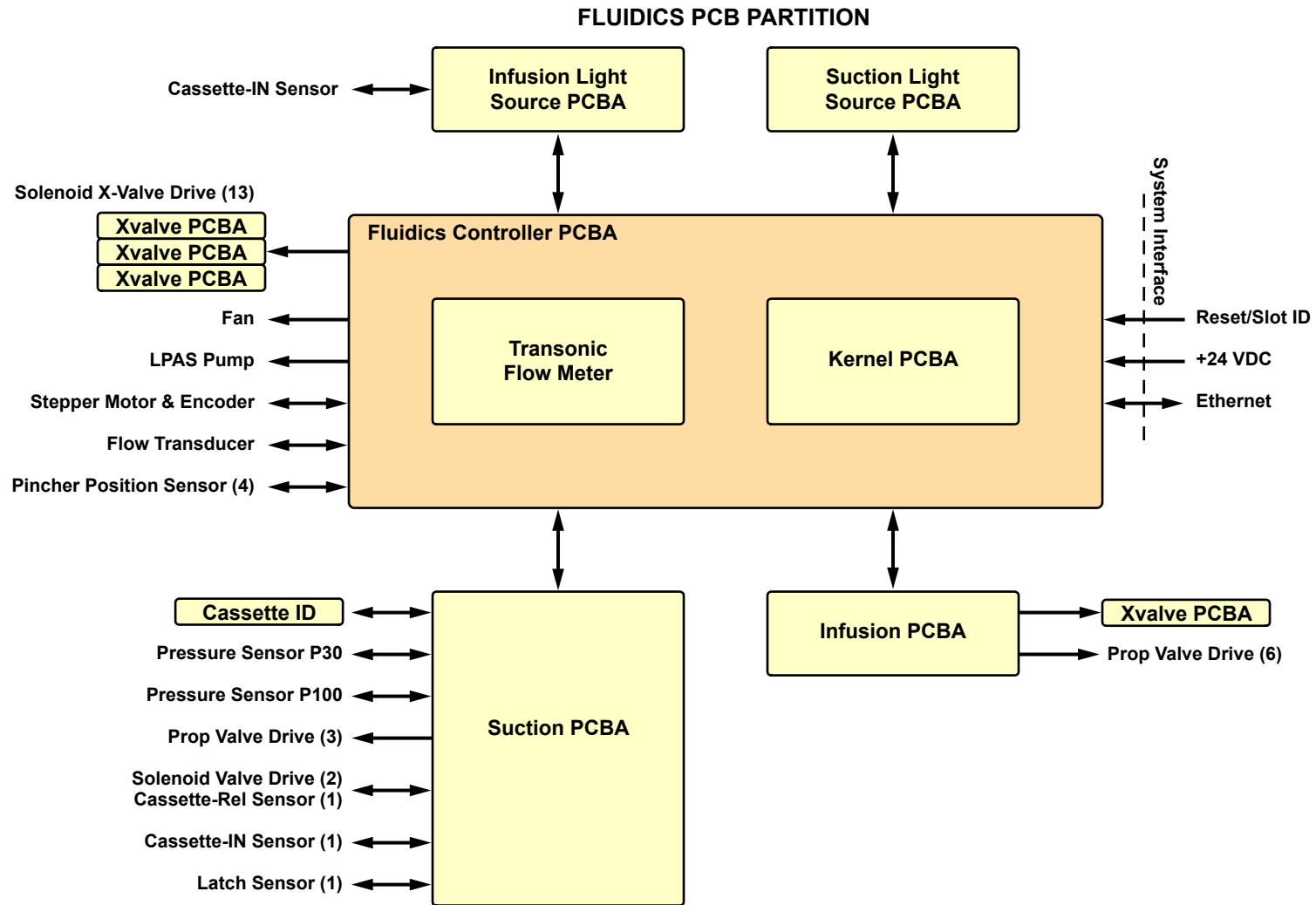


Figure 2-16 Fluidics PCB Partition

cassette pinch valve bubble. A special type of normally-retracted pincher is used for the cross-connect (normally closed) valve actuator; it has a smaller head diameter so that it can actuate inside the special cassette valve in this location. The actuators are driven by on/off valves, which are supplied with regulated pneumatic distribution air. Valve actuators that have been determined to be critical for safe operation of the submodule are equipped with optical position sensors. The circuitry for these sensors is located on the Fluidics Controller PCB. The driver electronics for all other actuators are equipped with current feedback circuits which allow the software to verify the state of each one of the actuators' drive solenoids.

Module Controller

The module controller is made up of three circuit board assemblies: the Kernel board, the Fluidics Controller board, and the Flow Controller board.

The hardware on the Kernel board is common to all *Constellation** submodules. It consists of an MPC8270 processor, DRAM and Flash memory, Ethernet and serial communication drivers, an FPGA with common and Fluidics specific logicware, and a number of ADC, DAC, and PWM channels. Flash memory on the Kernel board contains a small boot loader program responsible for downloading the fluidics application program from the Host module during system startup. The application program is downloaded into, and executed out of, DRAM memory.

The Fluidics Controller board provides the necessary interface and drive signals to support the main Fluidics module functions, such as the interface to the level sensors, proportional valve drivers, solenoid valve drivers, stepper motor

drivers, and cassette interface control signals. It also physically interconnects with the Kernel PCB and the Flow Sensor PCB.

The Flow Sensor PCB utilizes ultrasound technology to measure the flow rate of BSS* irrigating fluid out of the infusion port on the cassette. The board is connected through a cable to the actual ultrasonic transducers. It receives commands from the Kernel board via one of the MPC8270 processor's serial communication channels. The serial channel is running at 115200 baud to allow for flow measurements to be received from the Flow Sensor PCB at a maximum rate of 1 KHz.

Non Invasive Flow Sensor

The Non Invasive Flow Sensor (NIFS) is a discrete element capable of measuring the flow velocity in a special section of the cassette's infusion flow channel. The sensor contains a pair of piezoelectric crystals. One crystal emits an ultrasound sound signal while the other receives the signal. The two crystals alternate between emitting and receiving. As the ultrasound beam traverses the flow channel, each ray undergoes a measurable phase shift proportional to the average velocity of the infusion flow. The Flow Sensor PCB converts the measured phase shift into a volume flow rate.

When a cassette supporting infusion flow measurements is inserted, the NIFS is moved from its location inside the receiver mechanism out into contact with an elastomeric patch on the cassette; the patch acoustically couples the sensor with the flow channel. During the infusion calibration routine, readings from the infusion pressure and NIFS sensors are combined to characterize the flow resistance in the cassette, tubing set, and infusion

cannula. The equation for the acquired flow rate vs. pressure drop curve is then used in the intraocular pressure (IOP) control scheme, where the IOP is equal to the infusion pressure in the submodule minus the pressure drop in the infusion tubing set and infusion cannula at the currently-measured infusion flow rate.

When no cassette is inserted, the NIFS is retracted back into the receiver mechanism to prevent accidental damage to the sensor's sensitive parts.

Infusion and Extraction Level Sensors

The infusion and aspiration circuits contain chambers in the cassette which are used as reservoirs for the liquid flow demands of each circuit. The level of liquid in each chamber must be known during system operation, since it is these chambers which supply the liquid used during the case (infusion) and store the aspirated fluid (aspiration). The infusion and aspiration circuits provide continuous optical sensing of the liquid levels in the chambers. The level sensor consists of an array of sensing elements that are vertically aligned with the chamber. The liquid inside the chamber blocks the source light from reaching the portions of the sensing elements below the fluid level.

Cassette Detection Sensors

Two mechanisms utilizing optical interrupt sensors are used to sense the position of the cassette relative to the receiver. When the cassette is properly installed into the receiver, the optical sensors are tripped, signaling the software to close the cassette-clamping mechanism.

Cassette ID Sensors

Four optical sensors are located on the Cassette ID PCB mounted on the face of the receiver mechanism. The sensors interface with the plastic tabs on the rear of the cassette. If a plastic tab is present, the IR transmission is deflected and does not reach the corresponding optical sensor. The particular combination of tabs present on a cassette allows the system to identify it for appropriate use in the *Constellation** system.

Drain Pump

When a cassette is inserted into the receiver, the roller-type drain pump makes forceful contact with the cassette's elastomeric pump section. Rotating the pump causes fluid in the aspiration chamber to be pumped into the drain bag. The design of the pump ensures that the flow rate is directly proportional to the pump rotation speed, while minimizing pulsations associated with peristalsis.

Low Pressure Air Source Pump

The Low Pressure Air Source (LPAS) pump supplies low pressure air to the infusion subsystem. It consists of a positive displacement air pump, an intake accumulator (for quiet operation), a filter/muffler, an accumulator (an air reservoir to supply LPAS under fault conditions), a mechanical regulator set to 196 mmHg, and one pressure sensor to monitor the mechanical regulator output. The pump is used to provide pressurized and filtered air (not nitrogen) for infusion of liquid or air into the eye at a safe pressure level (there is no connection to pneumatic distribution pressure). The integrity of the pressure sensor is checked during setup.

Infusion Subsystem

The infusion subsystem utilizes LPAS pump-supplied air to provide controlled infusion pressure. It consists of three separate circuits. The first two are active infusion circuits; one supplies the cassette's infusion chamber A, and the other supplies infusion chamber B. Infusion circuit B can be used as a redundant infusion circuit or as an irrigation circuit as required by certain case types. The third circuit is the infusion back-up circuit, intended for use when a failure occurs such that neither circuit A nor B can provide pressure to support infusion.

Infusion circuit A includes the components listed below. Together with the module controller, these components control the pressure and flow in infusion circuit A.

- a normally-closed proportional valve which is used to regulate the flow of incoming air.
- a normally-open proportional valve which is used for venting the circuit to atmosphere
- two redundant pressure sensors which sense the pressure in the infusion circuit
- a three way valve used to divert pressurized infusion circuit A air into the F/AX circuit
- a three way valve used to allow 30 mmHg infusion backup air or infusion circuit A air into cassette infusion chamber A.

Similar to infusion circuit A, infusion circuit B includes the components listed next. Together with the module controller, these components control the pressure and flow in infusion circuit B.

- a normally-closed proportional valve which is used to regulate the flow of incoming air
- a normally-open proportional valve which is used for venting the circuit to atmosphere

- two redundant pressure sensors which sense the pressure in infusion circuit B, and
- a three way valve used to direct 30 mmHg infusion backup air into the circuit.

The infusion backup circuit is directly connected to the LPAS supply. The backup circuit includes a mechanical regulator set at 30 mmHg and a normally-open solenoid isolation valve. The infusion backup circuit is connected downstream to the normally-open ports on the three-way FA/X valve in infusion circuit A and the isolation valve in infusion circuit B. When either infusion circuit A or B fails, the normally open isolation valve will open, and the three-way valves will shuttle to the normally-open position, thus allowing the 30 mmHg back-up infusion pressure to reach infusion chambers A and B on the cassette.

Source Pressure Subsystem

The source pressure subsystem utilizes LPAS pump-supplied air to provide controlled pressure for the *BSS** fluidics bottle. It includes the components listed below. Together with the module controller, these components control the pressure and flow in the source pressure circuit. The integrity of the pressure sensor is checked during setup.

- a normally-closed proportional valve used to regulate the flow of incoming air.
- a normally-open proportional valve used to vent the circuit to atmosphere.
- one pressure sensor which senses the pressure in the circuit.
- a three way valve used to isolate the circuit from the port connection to the cassette.

Extraction Subsystem

The extraction subsystem utilizes the pneumatic distribution supply to provide controlled vacuum or pressure to the extraction circuit. It consists of the components listed below. Together with the module controller, these components are used to control the pressure, vacuum, and flow in the extraction circuit.

- a pressure regulator which regulates the maximum supply pressure to the circuit.
- a normally closed shut off valve which is used to shut off the supply air to the circuit.
- two normally closed proportional valves which supply air to a vacuum generator.
- a venturi vacuum generator which provides vacuum to the circuit.
- an orifice on the vacuum output of the generator which is used to choke the occasional reverse flow through the generator.
- a normally-closed proportional valve which is used to charge a receiver for generating proportional pressure and impulse reflux.
- a receiver.
- two pressure sensors.
- a pressure relief valve which is used to limit the maximum pressure in the receiver during reflux.
- a normally closed shut off valve which is used to charge the extraction circuit from the receiver.

Operational Description

The operation of the different functions supported by the Fluidics submodule is described in this section.

Cassette Insertion and Removal

The two cassette presence sensors are continuously monitored during operation of the system. When both sensor signals indicate that a cassette is inserted (after having been properly debounced) the cassette is locked in place by activating the Latch Close valve and turning off the Latch Open valve. Software monitors the Hall Effect sensor mounted on the latching mechanism to make sure the latch completely reaches its locked position.

After the cassette has been locked in place, the cassette type is identified by reading the analog outputs of four cassette ID sensors. Each ID sensor has an IR transmitter and receiver. The IR transmitters are turned on one at a time to avoid cross-talk between the receivers. The outputs of the ID sensors are connected to four ADC channels on the Kernel PCB. Software reads the analog voltages generated by the sensors and compares them against a threshold value for determining whether or not a tab is present in each one of the sensor locations.

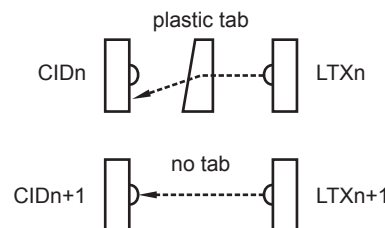


Figure 2-17 - Cassette ID Detection

If the cassette is identified as being compatible with the Non-Invasive Flow Sensor (NIFS), the NIFS actuator valve is turned on to move the NIFS in contact with the elastomeric flow sensor patch on the cassette.

When pressed, the cassette release button on top of the receiver mechanism triggers the cassette release optical sensor. When software detects that the cassette release button has been depressed, an ethernet message is transmitted by the fluidics software to the supervisor subsystem to get an approval to release the cassette. If the current operating state of the machine allows for the cassette to be removed, the supervisor in turn issues a command back to the fluidics subsystem to release the cassette. At this point the NIFS actuator and all pincher valves are retracted, after which the Latch Close valve is turned off and the Latch Open valve is activated to move the cassette clamping mechanism to the open position.

Cassette Tests

The following describes the sequence of actions and tests performed when a cassette is installed:

- The Cassette is latched in place.
- If the cassette latch does not reach its locked position (detected through the optical latch position sensor) within 4 seconds, the cassette is released and an advisory is displayed.
- The cassette ID is read and verified to be valid.
- The aspiration chamber is drained.

The following aspiration and infusion chamber tests are performed in parallel:

Aspiration Chamber Tests:

- The gain of the level sensor pixels are calibrated and verified. The test fails if the gain of any pixel falls outside a specified acceptable range.
- The chamber is pressurized to 120 mmHg. The cassette test fails if the measured pressure is not within 110-130 mmHg.
- The proportional pressure valve is completely opened and the vacuum valves are turned off. A check is made to ensure that the maximum achievable positive pressure is less than 220 mmHg.
- A maximum vacuum test is performed. The vacuum test fails if the system cannot generate a vacuum that is at least 175 mmHg higher than the current absolute vacuum level based on the current measured atmospheric pressure. For example: If the current measured atmospheric pressure is 760 mmHg, then the system needs to be able to generate at least $760 - 175 = 585$ mmHg vacuum for the test to pass.
- Vacuum is turned off. The cassette test fails if the vacuum in the chamber does not return to 0 mmHg within a specified time period.

Infusion Chamber Tests:

- The gain of the level sensor pixels are calibrated and verified. The test fails if the gain of any pixel falls outside a specified acceptable range.
- The chambers are pressurized to 120 mmHg. The cassette test fails if the measured pressure is not within 110-130 mmHg.
- Pressure is turned off. The cassette test fails if the pressure in the chamber does not return to 0 mmHg within a specified time period.

Extraction

The extraction function is used to aspirate cut vitreous and lens material out of the eye. The extraction system is venturi based; however, since the *Constellation** system has the ability to measure the flow of aspirated fluid, both suction and flow control modes are supported.

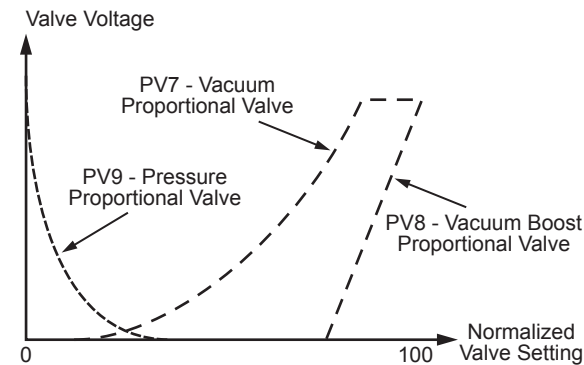


Figure 2-18 Prop Valve Drive Voltage Mapping

The fluidics submodule is capable of generating both pressure and vacuum in the extraction subsystem. Three proportional valves are used to control the pressure level in the aspiration chamber in the cassette. The fluidics software executes a control algorithm to control the pressure level in the aspiration chamber. The software reads the redundant pressure sensors and updates the drive voltages to the proportional valves every millisecond. The output of the algorithm is a normalized valve drive voltage setpoint that is mapped into an analog control voltage for each one of the three proportional valves. In this way, the algorithm simultaneously controls all three valves so the pressure level in the aspiration chamber can be varied from +150 mmHg pressure to -650 mmHg vacuum.

One of the differences between this cassette and the *Accurus** cassette is that aspirated fluid enters the cassette from the bottom of the aspiration chamber. This design change was made to support the new flow operating modes and various reflux modalities of the *Constellation** system. When fluid enters the chamber from the bottom, a continuous flow of fluid enters the chamber. If fluid enters from the top, drops of fluid falling into the chamber causes the fluid surface to fluctuate and disrupt flow measurements; and if air is present in the aspiration tubing set, air bubbles enter the chamber and disturb the flow measurements. In order to minimize the disturbance of air bubbles in the cassette, a plastic wall divides the aspiration chamber into two halves. Air bubbles pass through the fluid on one side of this bubble separator while flow measurements are being made on the other side. Most fluid level disturbances are damped by the presence of this plastic wall.

Suction Mode

In suction mode, the pressure in the aspiration chamber is set to the desired pressure as commanded by the user through the footswitch. The pressure in the aspiration chamber is controllable between +150 mmHg pressure and -650 mmHg vacuum. By allowing the chamber to be pressurized, and by setting the starting range of the treadle-controlled pressure to be close to the IOP, passive flow is minimized and precise control of low aspiration flows can be achieved.

Minimum and maximum flow limits are associated with the suction mode. The minimum flow limit is set to 0 cc/min to make sure regurgitation does not occur if, for some reason, the PEL is not configured correctly. The maximum flow limit is set through the user interface. If the calculated flow goes

outside the range of the configured flow limits, the fluidics subsystem automatically transitions into flow control mode. The system transitions back to suction mode when the measured flow is back within the flow limit range. Hysteresis is added to the flow limits to prevent the system from oscillating back and forth between the suction and flow control mode.

Flow Mode

In flow control mode, the flow rate commanded by the user through the footswitch treadle is used as the setpoint to the algorithm that controls the pressure in the suction chamber. The actual flow rate calculated is used as the input variable to the control loop. The peristaltic drain pump is set to a speed that results in the desired flow rate with adjustments made to keep the fluid level in the cassette in the middle of the flow mode operating range. If the fluid level goes outside the flow mode operating range, accurate flow measurements can no longer be made, and flow mode is turned off.

Minimum and maximum pressure limits are associated with the flow mode. If the required pressure to achieve the desired flow rate goes outside the range of the configured pressure limits, the fluidics subsystem automatically transitions into pressure control mode. The system transitions back to flow mode when the measured pressure is back within range of the pressure limits. Hysteresis is added to the pressure limits to prevent the system from oscillating back and forth between the flow and pressure control modes.

Priming

Priming is the process of removing air from the probe and/or handpiece, connecting the aspiration tubing set to the cassette's suction ports, and priming the suction circuits within the cassette. Additionally, priming fills the aspiration chamber with enough fluid to make operating the system in flow mode possible, and to allow reflux. There are two different ways of priming: push-prime and suction prime.

Push-Prime

The push-prime sequence primes the aspiration path of a probe or handpiece that is connected to the cassette by forcing fluid from the aspiration chamber into the aspiration tubing set and the probe or handpiece. Push-priming is only used when the cassette is clean in order to prevent contaminated material from exiting the aspiration ports.

Push-priming is a two step process. First, the aspiration chamber is filled with fluid from infusion chamber B. This is accomplished by applying a vacuum in the aspiration chamber and opening the SC and SC2 valves to open the fluid path between the infusion and aspiration chambers. When a sufficient amount of fluid has entered the aspiration chamber, valves SC and SC2 are closed. Secondly, the selected aspiration port is opened and the aspiration chamber is pressurized. Fluid is pushed out of the aspiration chamber into the aspiration tubing set and the probe or handpiece. The volume of fluid pushed into the tubing set is measured by reading the change of the fluid level in the aspiration chamber. When a predefined volume of fluid has been pushed into the tubing set, the push-prime process is complete.

By utilizing push-priming instead of suction prime, the time required to prime a 25 gauge probe is greatly reduced.

Suction Prime

The suction prime sequence primes the aspiration path of a probe or handpiece that is connected to the cassette by aspirating fluid through the probe or handpiece into the aspiration chamber. The pressure level in the aspiration chamber is set to a predefined vacuum level while the fluid flow into the cassette is monitored. The prime sequence is complete when the fluid level sensor in the aspiration chamber indicates that a certain volume of fluid has entered the aspiration chamber. The prime sequence is considered to have failed if the maximum prime timeout period is exceeded.

Reflux

Reflux is the ability to reverse the direction of aspiration flow such that effluent material is pushed back out of the aspiration tip. Reflux is typically used to clear a clogged aspiration tip. Additionally, it may be used for visualization of a surgical site by “blowing” blood and other material away from a particular point of interest, or it can be used to facilitate entry of the surgical tools into the wound. Three different types of reflux are supported: micro reflux, continuous reflux, and proportional reflux.

Micro Reflux

Micro reflux is created by generating a short-duration pressure pulse at the aspiration port. To generate the pulse, this sequence is executed.

1. The reflux valve is turned off to be able to charge the reflux accumulator.
2. The reflux accumulator is charged by running the extraction control loop with a high positive-pressure setpoint, typically around 1000 mmHg.
3. When the pressure in the reflux accumulator reaches the setpoint, the proportional valve is closed and valve S11 or S22 is opened, depending on the selected aspiration port.
4. After a short delay (the delay time depends on the opening time of the aspiration port) reflux valve L15 is turned on. The pressure stored in the reflux accumulator creates a pressure pulse that travels through both the suction port and the suction orifice on the vacuum generator. The suction orifice limits the maximum pressure and duration of the pressure pulse sent through the aspiration port.
5. After a predefined timeout period, typically in the 100 mS range, the previously-opened aspiration port valve is closed.

Continuous Reflux

Continuous reflux is reflux that generates a constant fluid flow out of the aspiration tip. Continuous reflux is typically only used to “bloom” the wound site for tool insertion during anterior segment procedures. The continuous reflux function is implemented by configuring the pinchers in the receiver mechanism to route fluid from infusion chamber B through the infusion/aspiration cross-connect path out of the aspiration output port. The flow out of the aspiration port is controlled by the pressure generated in infusion chamber B.

Proportional Reflux

Proportional reflux is reflux that ranges between a low flow rate and a high flow rate depending on the footswitch treadle position. As the treadle is depressed, materials are pushed out of the aspiration line at a quicker rate. The proportional reflux function is implemented by running the extraction system in suction mode with variable pressure setpoints being transmitted down to the fluidics submodule from the supervisor module. The volume of fluid available for proportional reflux is limited to the amount of fluid present within the flow mode operating range of the aspiration chamber.

Proportional reflux is generated by applying a positive pressure inside the aspiration chamber (using PV9). The pressure level applied is based on the current infusion pressure setpoint. This is done to ensure that there is no back flow into the aspiration chamber when the treadle is first depressed in proportional reflux mode.

For example: If the infusion setpoint is set to 30 mmHg and the proportional reflux setpoint is set to 0 mmHg, the aspiration chamber is pressurized to 30 mmHg. If the infusion setpoint is 30 mmHg and the proportional reflux pressure setpoint is 20 mmHg, the aspiration chamber is pressurized to 50 mmHg. For an infusion setpoint of 30 mmHg, the maximum proportional reflux pressure setpoint that we can achieve is 90 mmHg since we are only allowed to apply a maximum of 120 mmHg (90 + 30) positive pressure in the aspiration chamber.

Occlusion Detection

When anterior flow mode is active, the software monitors the flow impedance for the handpiece connected to the active aspiration port. The occlusion test evaluates different aspiration

vacuum and flow conditions and establishes appropriate aspiration limits for the detected conditions.

Drain Bag Volume

The fluidics application software estimates the volume of fluid transferred into the drain bag by utilizing the relationship between the pump speed and the generated flow rate. The pump efficiency relationship has been determined for a typical combination of cassette and receiver mechanism. When the estimated volume of fluid pumped into the drain bag indicates that the drain bag is full, a warning message is displayed to the operator.

Infusion

The infusion subsystem provides control of irrigation and infusion pressures during surgery. The infusion subsystem operates in single chamber or dual chamber mode depending on the type of surgery that is to be performed. With premium cassettes, pressurized infusion and irrigation are supported. With all other types of cassettes, only on/off control of infusion and irrigation are supported. The subsystem also controls infusion of air during F/AX.

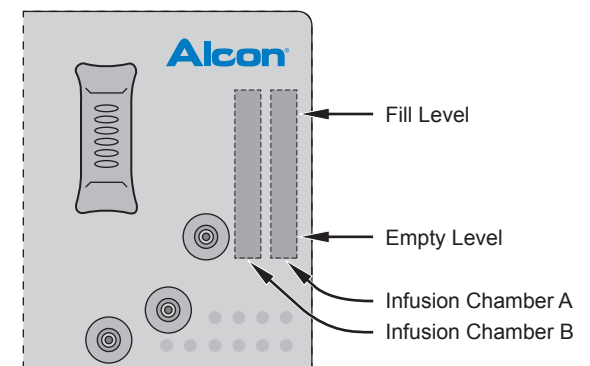


Figure 2-19 Cassette Infusion Chambers

The infusion subsystem contains three sets of proportional pressure valves and redundant pressure sensors to generate simultaneous independent infusion, irrigation, and *BSS** fluidics bottle pressure levels. Each pressure generator is controlled using a software algorithm.

The fluid levels in the infusion chambers of the cassette are measured using the same type of level sensors used to measure the fluid level in the aspiration chamber.

LPAS Pump

The LPAS pump provides air pressure to the infusion subsystem. The pump charges an accumulator with air to a pressure of 10 PSIG. To ensure safe operation, a pressure regulator located downstream from the accumulator limits the pressure output of the accumulator to 207 mmHg. In the case of a power loss, this volume supplies the 30 mmHg infusion backup pressure circuit with reserve air.

Dual Chamber Mode

The dual chamber infusion operating mode is used with premium cassettes during posterior cases. In dual chamber mode, control of infusion pressure is switched back and forth between the two cassette chambers. While one chamber is providing infusion pressure (“active”), the other chamber (“filling”) is being refilled with fluid from the *BSS** fluidics bottle.

When the fluid level in the active infusion chamber reaches the Empty Level, a chamber switch is initiated. The pressure in the filling chamber (previously filled with fluid) is adjusted to the same pressure as in the active chamber. When the pressure in the filling chamber has stabilized, the output of the filling chamber is opened and the

active chamber’s output is closed. The pressure in the previously active chamber is turned off and its input is opened to allow it to be refilled with *BSS** irrigating fluid.

Software monitors the fluid level in the chamber while the chamber is being refilled. When the level reaches the Fill Level, the input valve is closed. If the chamber does not fill with fluid within a specified timeout period, or if software detects large level fluctuation in the chamber, the *BSS** fluidics bottle is deemed to be empty and the operator is notified. The volumes in the infusion chambers were designed to allow the *BSS** fluidics bottle to be replaced with enough reserve available in the active chamber to allow the bottle to be replaced without interrupting surgery.

Single Chamber Mode

The single chamber operating mode is used in combined and anterior surgical modes. Both infusion chambers can be active at the same time, providing independent infusion and irrigation pressures. Infusion is controlled by chamber A and irrigation is controlled from chamber B.

In single chamber mode, when the fluid level reaches the Empty Level, the input to the chamber is opened to allow the chamber to be refilled while it provides infusion or irrigation pressure. The *BSS** fluidics bottle is pressurized to overcome the pressure in the infusion chambers. The algorithm controlling the chamber pressure compensates for the pressure inside the infusion bottle by adjusting the voltages to the proportional pressure and vent valves to not disturb the pressure delivered to the eye during the fill process. When the fluid level in the chamber reaches the Fill Level, the input valve is closed. If the chamber does not fill with fluid within a specified timeout period, or if software

detects large level fluctuation in the chamber, the *BSS** fluidics bottle is deemed empty and the user is notified. The Empty Level is set at a higher level than in dual chamber mode to make a large enough volume of fluid available to be able to not interrupt surgery if the infusion bottle runs out of fluid and needs to be replaced.

IOP Compensation

IOP compensation is one of the key innovations with the *Constellation** system. The IOP control algorithm compensates for the pressure drop caused by fluid flowing through the infusion tubing set to provide a constant IOP. IOP compensation is available only with premium cassettes in posterior and combined surgical modes.

Tubing Calibration

Tubing calibration is required to determine factors required for IOP compensation calculations. During calibration, the infusion cannula is placed at the same level as the cassette and the infusion pressure is ramped from 0 to a max pressure setpoint and back to 0 mmHg while flow and pressure data samples are being collected. The max calibration pressure is dependent on the gauge of the selected infusion cannula.

Priming

Before infusion and irrigation can be turned on, the infusion chambers and connected tubing sets and cannulas need to be filled with fluid.

In dual chamber mode, the following sequence of steps is executed to prime the infusion tubing:

1. AI and BI are opened to fill the infusion chambers with fluid from the *BSS** fluidics bottle.

2. AI and BI are closed when the chambers are filled with fluid.
3. Chamber A is pressurized and AO is opened to start priming the infusion tubing.
4. Software monitors the fluid level in the infusion chambers. After a volume of fluid sufficient to prime the path between the output of chamber A and the infusion port on the cassette has flowed out of chamber A, AO is closed and the pressure in chamber A is turned off.
5. Chamber B is pressurized and BO is opened.
6. After a volume of fluid sufficient to fill the complete infusion tubing set has been transferred out of infusion chamber B, BO is closed and priming is complete.

In single chamber mode, the following sequence of steps is executed to prime the infusion and irrigation tubing:

1. AI and BI are opened to fill the infusion chambers with fluid from the *BSS** fluidics bottle.
2. AI and BI are closed when the chambers are filled with fluid.
3. Chambers A and B are pressurized and valves AO and BO are opened to start priming the infusion and irrigation tubing sets.
4. Software monitors the fluid levels in the chambers. After a volume of fluid sufficient to fill each one of the connected tubing sets has been transferred out of the chambers, the output of the respective chamber is closed and the pressure turned off.
5. When both tubing sets have been filled with fluid, priming is complete.

***BSS** Fluidics Bottle Pressurization**

The pressure in the *BSS** fluidics bottle needs to be higher than the pressure in the infusion chambers in order for the chambers to be refilled while infusion and/or irrigation are turned on. The pressurization

circuit is controlled by a software algorithm. The bottle is pressurized to 150 mmHg. No venting of the bottle pressure is available.

***BSS** Fluidics Bottle Empty Detection**

During operation, with a premium cassette inserted, the system can detect when the *BSS** fluidics bottle runs out of fluid and issue a warning to the operator. When the operator is notified, a limited reserve of infusion fluid is still available as described previously, allowing surgery to continue while the bottle is being replaced. Additionally, while operating in a posterior surgical mode with a premium cassette, the system keeps track of the volume of fluid remaining in the bottle. When an estimated 50 cc of fluid is left in the bottle, a near empty warning is issued.

Level Sensing

The fluid level sensors utilize 512-pixel linear sensor arrays. The individual sensing elements are spaced 0.005” apart. They provide optical sensing of the liquid levels in the chambers due to the difference between the liquid vs. air effective transmission of the source light which travels through the chambers. The maximum level sensor reading acquisition rate is 1 KHz. The logicware in the FPGA on the Kernel board generates the clock signals which shift out the captured analog light intensity readings of each pixel element. The logicware converts the analog pixel signals into digital values, processes the values, and compares the results against a programmed fluid detection threshold value. A digital level reading is then presented to the fluidics application software.

The source light to the sensors is generated by two banks of seven LED’s. If one bank of LED’s fails, the other bank will still provide sufficient light for fluid level readings to continue, but at a reduced level of functionality.

Calibration

The gain of each sensor element within each level sensor is not identical. In order to compensate for this variation, the logicware in the Fluidics FPGA applies a different gain value to each pixel element. After a cassette has been inserted, the software performs a calibration of the level sensors. During calibration, the logicware stores ADC readings from all 512 pixel elements into a memory area in the FPGA, the value for each pixel element being an average of multiple level sensor readings. The fluidics software retrieves the ADC readings and calculates the required gain for each pixel to eliminate sensitivity discontinuity among pixel elements. The resulting gain profile is written back to the FPGA. The gain profile is used by the logicware to adjust the output of each pixel element.

High Resolution Mode

The level sensor is capable of operating in a high resolution mode in which fractional, sub-pixel fluid level information can be acquired. In this mode, the FPGA logicware captures a full frame of 512 pixel intensity readings into a memory array in the FPGA each time a fluid level reading is performed. The logicware compares the captured values against the programmed fluid detection threshold value and returns the pixel location that is closest to this value to the fluidics software. The fluidics software then reads back the intensity values of the pixels surrounding the triggered pixel location from the FPGA memory array and, by utilizing an interpolation algorithm, uses these values to calculate a high resolution fluid level. Specifically, this high resolution mode is used in extraction flow control mode to be able to accurately calculate the aspiration flow.

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Pneumatic System

The Pneumatic System consists of the Air Distribution (212-1040-501) and Pneumatic Modules (212-1023-501). The Air Distribution provides the Pneumatics and Fluidics Modules with compressed air or nitrogen (N₂) gas. The Pneumatic Module provides the required signals to run various pneumatic instruments. The Pneumatic System block diagram shown in Figure 2-20 is divided into three blocks: Source Pressure Circuit, Utility Circuit, and Cutters Circuit.

Air Distribution

The compressed air/nitrogen is delivered through the pressure supply hose to the console. The source pressure is monitored to ensure pressure is within a specified range. If source pressure is within the specified range, isolation valve L16 allows the source pressure to go through, but if source pressure is below minimum or above maximum requirements, isolation valve L16 will not open.

If source pressure is within the specified range, pressure is sent through a water trap filter (FT1) and on to transducer MT8. Filter replacement is determined by reading the dynamic pressure differential across FT1 by comparing the readings at MT7 and MT8.

The source pressure circuit shown in Figure 2-20 consists of the Air Distribution assembly that monitors and provides pressure to the Pneumatic and Fluidics Modules. Additionally, pressure from 2 independent gas cylinders is routed through the Air Distribution to the Pneumatic Module utility circuit.

Pneumatic Module

The Pneumatic manifold has two built-in reservoirs (AC1 and AC2) that allow two dynamic pressure control systems to operate independently from each other. The proportional valves, together with the transducers and software/PID loop, control the pressure generated by these two independent pressure control systems. Any pressure set point is generated by a constant communication between the proportional valve and the transducer. The resultant pressure is sent through the appropriate channel to the dedicated control valve. This valve is either open or pulsed, and the pressure is then routed to the dedicated console connector.

Cutters Circuit

The system provides proportional, fixed and pulsed pressure for the vitrectomy probe (dual acting) and pneumatic scissors. These devices share the same dynamically variable pressure control system, but do not share the same pneumatic port connectors.

- Vitrectomy probes have specific pneumatic requirements. The system generates the required pressure and pulses to run the probes correctly. The main manifold provides two outputs for vitrectomy cutters.
- Scissors pressure requirements are generated by the same variable pressure and proportional/pulsed pressure control system, but are delivered through a different single port.
- The Multifunction port is currently not utilized by pneumatic accessories.

Utility Circuit

The Utility circuit provides the pressure/ vacuum controls for the Forceps, VFC, and AGF functions.

- Forceps pressure requirements are generated by the variable proportional pressure control system, but are delivered through a different single port.
- VFC requirements are generated by the variable proportional pressure/ vacuum control system, but are delivered through a different single port. This port provides pressure and vacuum for VFC injection and extraction.
- Auto Gas Filling (AGF) air/nitrogen pressure requirements are generated by the same variable proportional pressure control system, but are delivered through a specific and unique dual/coax port. One of the ports dedicated for air/nitrogen, the other for gases. The delivery system for the gases (C3F₈ and SF₆) is routed through specific circuits that allow pressure control and selected gas to be delivered to the consumable.

SmartVit

Systems with software 4.00.XX and above include SmartVit probe drive. SmartVit is an adaptive UltraVit probe drive that utilizes output pressure transducers MT1 and MT2 to compensate for component variation. The SmartVit probe drive is used to achieve consistent pressure waveforms required for the various UltraVit probes. This adaptive approach requires a periodic probe drive optimization to scan through all cut rates and modalities for each drive table.

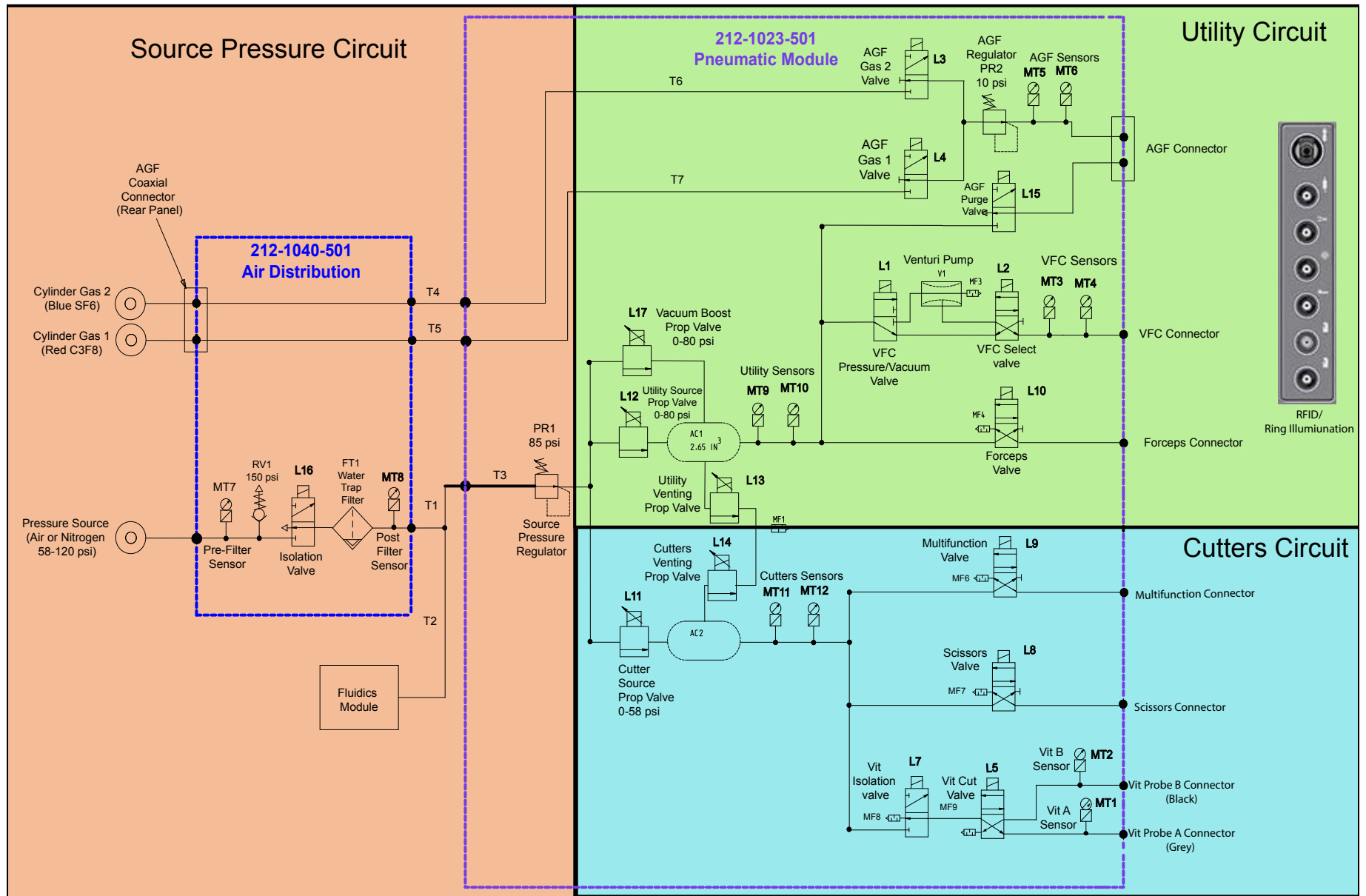


Figure 2-20 Pneumatics and Air Distribution - This figure shows a functional diagram of the Pneumatics System.

PNEUMATIC SYSTEM FUNCTIONALITIES

UltraVit* Probe High Speed Cutter

*UltraVit** probes require a dual-alternating-pressure signal in order to function. To achieve this requirement, the Pneumatic Module has valve L5 to provide a dual-output pressure. This dual-output pressure is routed to male and female pneumatic connectors located on front of the module. When the operator selects vit cutting, an electric signal, and a set point pressure (psig) is sent to a proportional valve L11 and 3-way isolation valve (L7) is commanded to open. At the same time, a second pulsed-electrical signal (PWM) is sent to 4-way valve L5 to generate a variable-speed pulsed-dual-output pressure signal to the console dedicated connectors.

Scissors – Proportional

Proportional valves L11 (pressure) & L14 (vent) act as a voltage controlled regulators. The voltage provided is based upon footswitch travel. These two valves work together to vary the proportional pressure. An increase in voltage to L11, results in an increase in pressure to the scissors port. Inversely, a decrease in voltage results in a decrease in scissors output pressure. L14 is used as a vent valve to provide control in achieving the output pressure. Pressure is stored in an accumulator chamber (AC2) and monitored by redundant transducers MT11 and MT12. L8 is a 4-way valve that is signaled to open when the footswitch is pressed. This delivers the proportional pressure output to the scissors connector.

As the footswitch is pressed down, the voltage to L11 increases, as does the pressure supplied to the scissors port. This correlates to the scissors blades closing. When the footswitch is released, less voltage/pressure is supplied to L11 and voltage is supplied to L14 to reduce/vent pressure and the scissors blades open. Scissors Multicut is achieved by turning L8 on/off and pulsing pressure to the scissors port.

Forceps – Proportional

Proportional valves L12 (pressure) & L13 (vent) act as a voltage controlled regulators. The voltage provided is based upon footswitch travel. These two valves work together to vary the proportional pressure. An increase in voltage to L12, results in an increase in pressure to the scissors port. Inversely, a decrease in voltage results in a decrease in scissors output pressure. L13 is used as a vent valve to provide control in achieving the output pressure.

Pressure is stored in an accumulator chamber (AC1) and monitored by redundant transducers MT19 and MT10. L10 is a 4-way solenoid valve that is signaled to open when the footswitch is pressed. This delivers the proportional pressure output to the scissors connector.

As the footswitch is pressed down, the voltage to L12 increases, as does the pressure supplied to the scissors port. This correlates to the forceps blades closing. When the footswitch is released, less voltage/pressure is supplied to L12 and voltage is supplied to L13 to reduce/vent pressure and the forceps blades open.

VFC

VFC requires proportional pressure for injection mode and vacuum for extraction mode. Proportional pressure is controlled by valves L12 & L13, and supplied through accumulator chamber (AC1) monitored by transducers MT9 & MT10.

L1 directs pressure to either the venturi pump for extraction or solenoid valve L2 for injection. When extraction mode is selected, pressure is directed to the venturi pump and vacuum is delivered through L2 to the VFC connector. When injection mode is selected, L1 directs pressure to L2 and a corresponding pressure is delivered to the VFC connector. The output of L2 is monitored by redundant transducers MT3 & MT4.

Auto Gas Fill (AGF)

Auto Gas Filling is offered for 2 different types of gases, referred to as Gas 2 (SF6) or Gas 1 (C3F8). Each is color-coded with unique connectors/tubing to ensure correct connection to each specific gas. SF6 is colored-coded blue and C3F8 is color-coded red. The sequence to fill the AGF consumable syringe requires cycles that consists of purging air and filling gas. The number of purge cycles determines the minimum percentage of gas concentration and is selectable by the user.

Purge - The pressure used for the purge portion of the AGF cycle is delivered through the same proportional pressure control used for forceps and VFC. The set point for the AGF purge is predetermined through software. During the purge, L15 is turned on to deliver set point to the back of the AGF consumable syringe to purge

air and ensure a minimum gas concentration. Fill - Depending on which gas is selected, L3 (SF6) or L4 (C3F8) directs flow to pressure regulator PR2. PR2 is set to 10 psi and monitored by redundant transducers MT5 and MT6.

PNEUMATICS SYSTEM - ELECTRICAL

The Pneumatics Module provides pneumatics control and air pressure to enable the use of various pneumatics tools such as cutters, scissors, and forceps, and functions such as AGF and VFC. The Pneumatics Module electronics hardware allows control and actuation of on/off and proportional valves, and provides pressure sensor reading for control of these valves, all under software control. The electronics hardware is composed of the following PCBA's.

- The Pneumatics Controller PCBA can be partitioned into kernel and application parts. The kernel provides and supports the Ethernet connection that allows the Pneumatics Module to communicate with the host via the supervisor. The application part of the controller provides valve drivers, DC/DC converters, pneumatics RFID interface, and other circuitry. The Controller PCBA also interfaces with the Transducer Interface and Air Distribution PCBA's.
- The Pneumatics Transducer Interface PCBA interfaces with all the pneumatics module valves and pressure sensors. This PCBA routes valve driver signals from the Controller PCBA to respective valves, and provides 10 conditioned (amplified and filtered) pressure sensor signals to the kernel ADCs, via the Controller PCBA.
- The Air Distribution PCBA is separate from the Pneumatics Module. It provides access to the main air pressure source. This PCBA routes a single valve driver signal from the Controller PCBA to an on/off valve, and provides two conditioned (amplified and filtered) pressure sensor signals to the kernel ADCs, via the Controller PCBA.

U/S Diathermy Module

The US module includes two PCBs, a large controller with an integrated NGVS PowerPC kernel designed to provide simultaneous ultrasound and diathermy power to respective handpieces, and a smaller PCB used to illuminate colored rings around connectors at the front of the module. The colors reflect the state of a particular connector and/or the attached device.

Other components which are part of this module include two US handpiece interface cables, one diathermy probe interface cable, an interface cable to the Ring Illumination PCB, a sheet metal enclosure, and a plastic face plate.

The block diagram shows the different functions of the US module. They include power conversion, kernel, ultrasound driver, diathermy driver, and ring illumination control.

Power Conversion

The US module is designed to operate on a single 24 VDC supply at a maximum current of 6 A. Inside the module, the 24 VDC is filtered and converted to nine other voltages required by the module's electronic components.

The block diagram shows the structure of the power conversion scheme for the US module with the inputs and outputs of the various regulators.

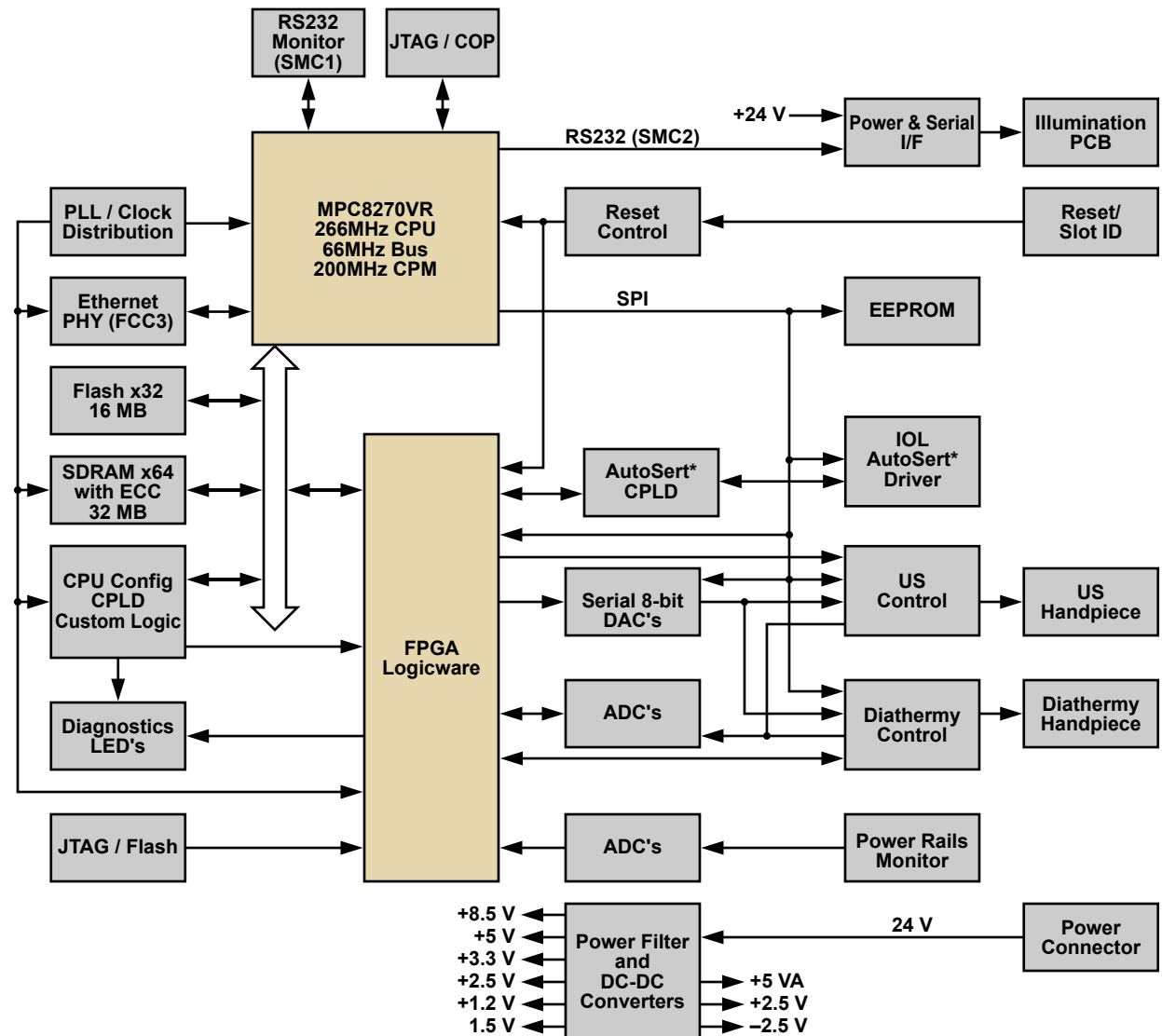


Figure 2-21 U/S Diathermy Module

Power Supply Monitoring

Each of DC voltages has a visual status indicator and is monitored through a dedicated channel of kernel ADCs U63 & U65. ADC U65 is also used to monitor board temperature VTEMP, and reference voltages 2.048 V and 4.096 V.

Kernel

The kernel refers to the microcomputer on the PCB. It consists of a 32-bit MPC8270 power-pc processor running at 266 MHz, DRAM and flash memories, ethernet phy, an FPGA, a CPLD, four 8-channel 16-bit ADCs, and two 8-channel 16-bit DACs. Other key features are listed in Table 2-6.

Ultrasound Driver

The ultrasound driver refers to the US programmable DC-DC converter, the NCO, US push-pull amplifier, and the associated FPGA logic and feedback circuits. It is operated in closed loop control to maintain safe and efficient operating conditions for the patient and the handpiece (see Figure 2-22).

Ultrasound Voltage and Current Feedback

The ultrasound function is controlled by the module application software which uses concurrent power and frequency PID (Proportional, Integral, and Derivative) loops to control and drive the ultrasound handpiece safely and efficiently.

Diathermy Driver

The diathermy driver is a proportional bipolar high frequency amplifier. It is designed to output a 1.5 MHz sine wave to drive electrosurgical probes for the purpose of coagulating vessels and other soft tissues. The amplitude of the sine wave is adjustable via a programmable DC-DC converter.

A power control PID loop is implemented in software to limit and control the power delivered to the probe (see Figure 2-23).

The 1.5 MHz base frequency is generated from a fixed source inside the FPGA, and is used to generate COAG_CLK1 and COAG_CLK2 complementary clock signals to the diathermy amplifier MOSFETs, and set the frequency of the sine wave.

IOL AutoSert* Driver - (Optional Feature)

The actuation of the IOL injector is driven by a Brushless, Sensorless DC motor. The brushless motor is controlled in a six-step commutation sequence using a triple half-bridge to steer current through the three motor windings. Biasing the windings transforms electrical energy into mechanical energy by creating an electromagnetic field that applies torque to the magnetic rotor. During each step in the sequence, two of the windings are biased in opposite directions, while the third winding is left floating. As the internal magnetic rotor passes by the unbiased winding, an electromagnetic force induces a voltage back into the winding. The motor controller commutates the current through the windings when the voltage induced into this winding is equal to one-half the drive voltage. The IOL driver performs speed control by a combination of pulsing the voltage applied to the motor on and off in varying duty cycle and varying the IOL supply voltage. The position of the plunger is known from the number of commutations since being in the home position.

Feature	Description
Processor	MPC8270VR, 266 MHz Core, 200 MHz CPM, 66 MHz bus.
SDRAM	Up to 64 Mbyte @66 MHz clock rate. Bus width is x64, with ECC option.
FLASH	Up to 64 Mbyte Spansion MirrorBit FLASH Bus width x32.
PCI	PCI not used.
Ethernet Port	10/100 Base T Ethernet ports, Intel LXT971. MII interface, MDIO and MDIC generated by CPLD.
Ethernet LEDs	RJ45 connectors / with LEDs.
Monitor Port	2x5 header for TXD, RXD, & GND.
JTAG/COP	2x8 header, wired per MPC8270 documentation.
JTAG/CPLD LEDs	2x5 header for CPLD programming. Power (+5V, +3.3V, +1.5V, +24V, +1.2V, +2.5V). Four Status (customer: SYSERR, SYSRDY, PWRGD, HBEAT). Two user LEDs controlled by CPLD.
Reset Switch	Pushbutton mechanical switch.
Power Supply	+24 V input power.
FPGA	Xilinx XC3S1000.
ADC	LTC1867.
DAC	LTC2600.

Table 2-7 Kernel Features Summary

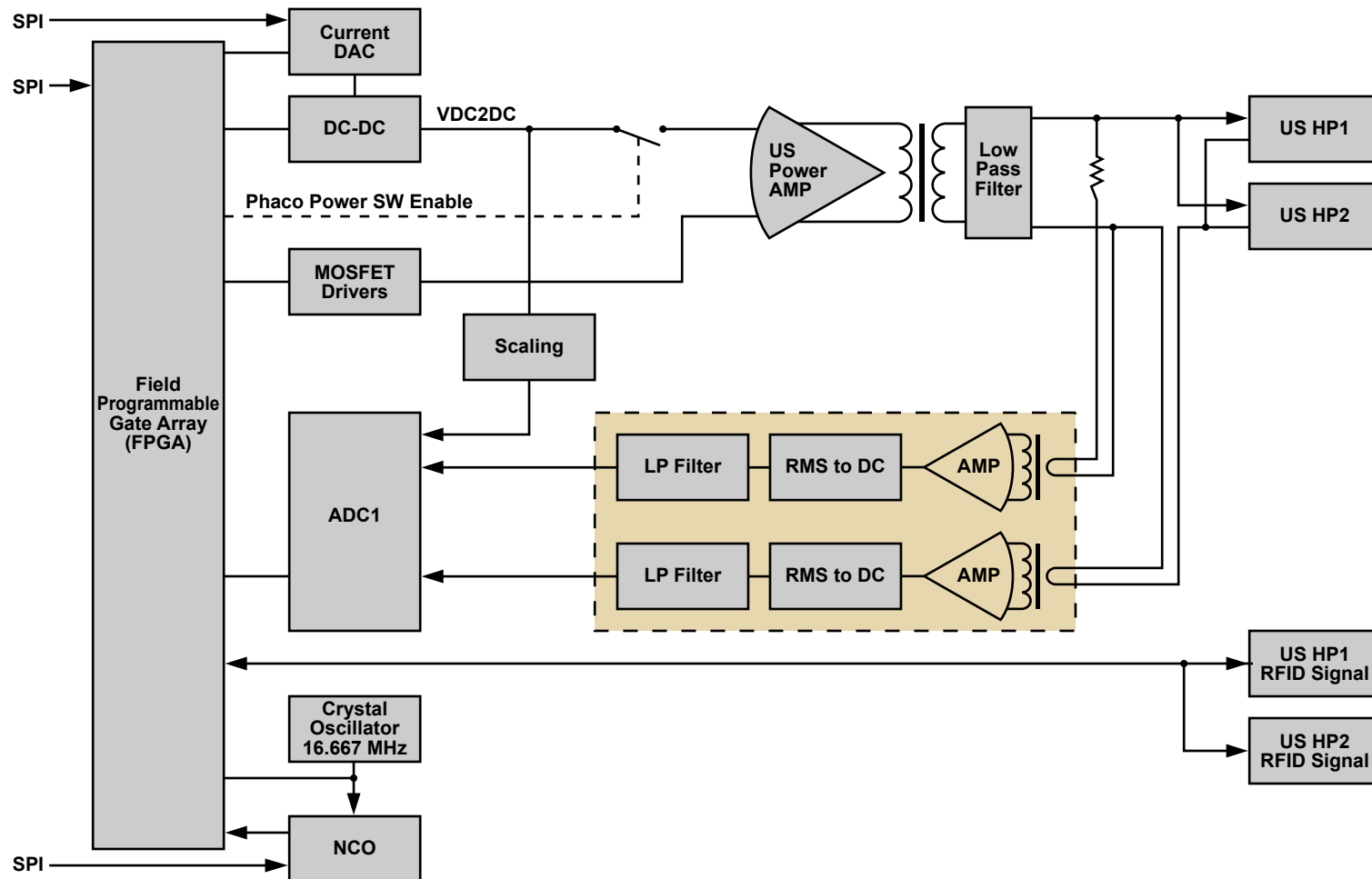


Figure 2-22 U/S Driver

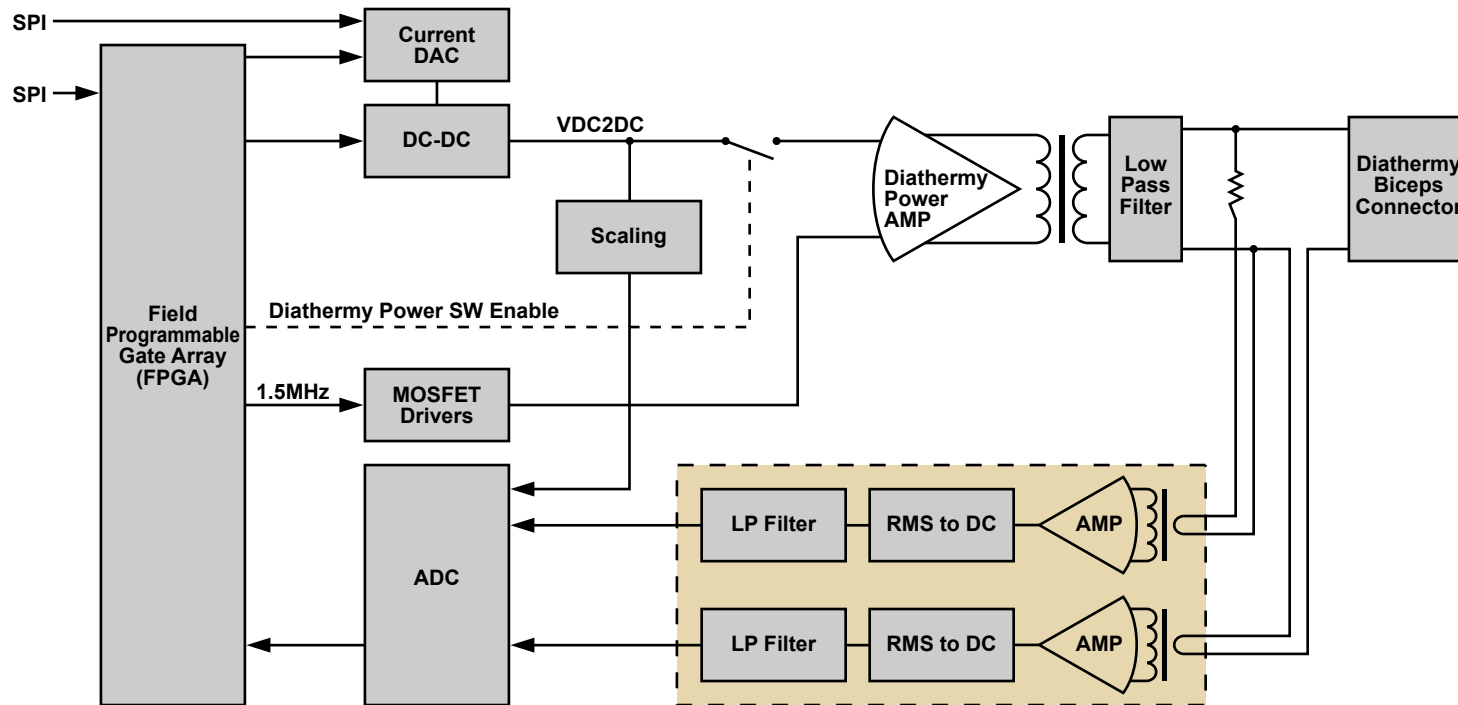


Figure 2-23 Diathermy Driver

Ring Illumination PCB

The Ring Illumination PCB uses PIC18F4410 microcontroller from microchip to control the lighting of three color LEDs forming light rings around five connectors on the front connector panel (see Figure 2-24). Each ring is made of 12 discrete tri-color LEDs. The anodes of all the LEDs are tied together to +5 V, and the cathodes of each color from around each ring are tied to a single n-channel MOSFET. Each MOSFET is driven by a programmable duty cycle output pin from the microcontroller. A total of 12 outputs are used as the two rings for the diathermy are driven in parallel. The microcontroller runs from a 10 MHz external oscillator and has a JTAG interface for testing and programming.

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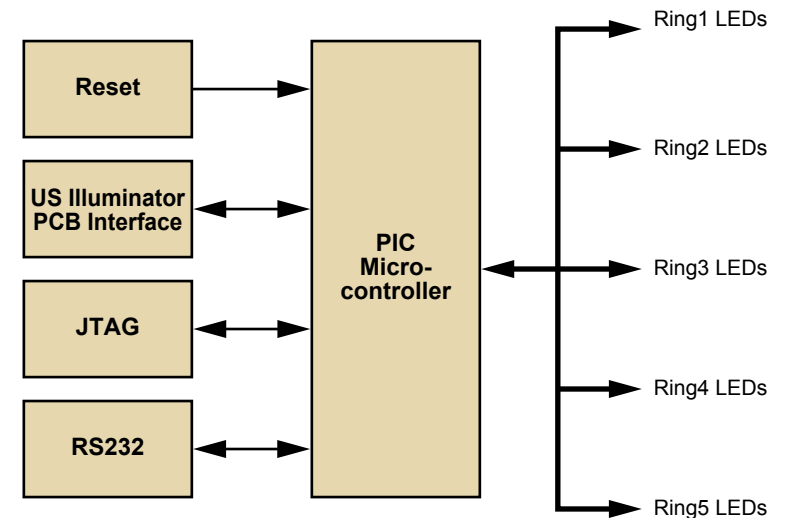


Figure 2-24 Ring Illumination PCB

Footswitch

Input to the *Constellation** system is accepted from a footswitch. The physical structure and function of the *Constellation** footswitch is broken into two major subassemblies: the main footswitch assembly and the toe/heel switch assembly. The main footswitch assembly houses the treadle and detent mechanisms. The toe/heel switch assembly consists of the housing, environmentally sealed switches, and switch activation mechanism.

Main Footswitch Assembly

The main footswitch assembly consists of a treadle mechanism and six side switches. There are four switch actions on the front of the footswitch (two switches, each with horizontal and vertical action) and two at the heel (vertical action).

The treadle mechanism consists of a treadle, treadle shaft, and gear drive mechanism. The treadle rotation is transmitted to a DC motor to provide three tactile detents by means of a gear drive mechanism. The treadle angle of rotational motion is picked up by the encoder that closes the signal/treadle position loop. Once the treadle force is released, the extension spring returns the treadle to its home position.

The heel switch assembly consists of the switch housing, switch cover plate-striker, electro-mechanical pushbutton switch, rear fulcrum device, and front cover support device. The heel switch assembly (left and right) is mounted on the rear side of the main footswitch housing.

Operational Description

Most of the surgical functions such as irrigation, aspiration, vitrectomy, phacoemulsification, *AquaLase**, diathermy, and reflux are controlled through the footswitch. Major footswitch subassemblies are described in this section.

Treadle Mechanism

The user depresses the treadle to generate a desired signal. The treadle rotates about its shaft under applied pressure. There are four treadle tactile detents, designated 0, 1, 2, and 3. Position 0 is the home, fully upright, treadle position. Positions 2, 3, and 4 are programmed according to system specifications. The return spring tension is adjusted by turning a knob on the front of the footswitch.

Toe and Heel Switches

These pushbutton-type switches are used to enable and disable system functions. The toe switches (one on each side, with two activations each) are activated by pressing the switch cover sideways (horizontally) or down (vertically). The surgical functions the toe switches control are user-remappable, and may include the following: enable/disable cutting in vitrectomy mode, enable/disable U/S in a fragmentation mode, infusion or F/AX mode, diathermy mode, etc.

Each heel switch is activated by depressing the switch cover vertically. The cover pivots about a rear fulcrum and about a front support device. It may rotate about these pivot points or translate vertically down and activate a single pushbutton switch. This complex cover plate motion gives the user the feeling of a “floating” heel switch. The surgical functions the heel switch controls are user-remappable and may include reflux.

Encoder

The incremental type, panel mount, optical encoder used in the *Constellation** footswitch, is coupled with the treadle rotation shaft by means of a gear train with a gear ratio of 5:1. It is a non-contacting rotary to digital converter with 500 cycles per revolution. The encoder is used as a position feedback device. It converts real-time shaft angle, speed, and direction into TTL-compatible outputs (two digital waveforms 90° out of phase). This encoder utilizes an unbreakable mylar disk, metal shaft and bushing, LED light source, and monolithic electronics. It operates from a single +5 VDC supply.

Vertical Treadle Position

The footswitch treadle is connected to an encoder which outputs quadrature information. This quadrature information is converted to a relative position by the FPGA. The current position is stored in this register. The register contents are cleared by the FPGA upon power on reset, or due to a true (high level) Treadle Up (vertical) signal from the footswitch.

Horizontal Treadle Position

The footswitch treadle is connected to an encoder which outputs quadrature information. This quadrature information is converted to a relative position by the FPGA. The current position is stored in this register. The register contents are cleared by the FPGA upon power on reset, or due to a true (high level) Horizontal Home signal from the footswitch.

Switch Register 1

The footswitch switch register is used to sense the condition of the footswitch switches.

Vertical Detent PWM

The footswitch vertical detent PWM is used to give force feedback to the surgeon. A zero value gives no force feedback and a 0xFFFF gives the maximum amount of force feedback.

Controlling Supervisor Board

The footswitch controlling supervisor board is located in the *Constellation** console.

Treadle Spring Failure Input Mechanism

The treadle spring failure input mechanism consists of a normally-closed 2-pin switch, stainless steel gold plated push plate, and a push plate mounting lever which is attached to a treadle rotation shaft. The treadle tension adjustment spring preloads the push plate against the two pins. In case of spring failure, the contact between the two pins and a push plate breaks, upon which an electrical signal is sent to the console to warn about the failure.

Footswitch PCB

The Footswitch PCB passes the switch and treadle encoder signals to the Supervisor PCB. The software running on the supervisor receives and processes the switch signals and reads the encoder signals for the treadle position.

Button Switches

The PCB reads the six switch signals from two cables to six momentary switches and outputs them at TTL level outputs to the *Constellation** supervisor module to indicate the switch status.

Treadle Home Position Sensor

The PCB reads the spring detection sensor signal for Treadle home position, and outputs it at TTL level to the *Constellation** supervisor module.

Treadle Position

The PCB outputs two-channel quadrature signals from an optical encoder at TTL level to the *Constellation** supervisor module to indicate the relative position of the footswitch, and to provide linear proportional control. The treadle position is reset by the treadle home sensor.

Detent Motor

The footswitch uses a DC motor to provide force detents and vibration to delineate positions of the footswitch treadle. The number of, location of, and values for the detents and vibration are programmed by the Supervisor PCB based upon the treadle position, which was output by two output signals from the encoder.

Footswitch PCB Revision Output

The voltage divider (resistors on the Footswitch PCB and on the Supervisor PCB) provide a voltage signal to the Supervisor module to distinguish different models of footswitches.

PCB Tilt Switch

The Footswitch PCB has a “tilt tip-over” device installed. The tilt switch operates when tilted from the horizontal position. It is a normally open, non-mercury, contacts switch. The switch movement required to cause control change, off to on, is called the differential angle. When the footswitch is in an operational position, the tilt switch is in its open position; the circuit goes through the tilt switch and a MOSFET device and provides the +5 VDC return signal. When the footswitch tilts more than 60 degrees (± 10 degrees) or totally turns over, the tilt switch closes, shutting off the +5 V power supply for the PCB, disabling all of the switches.

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Remote Control

The *Constellation** remote control is the same as the remote control for the *Infiniti** system with only minor modifications to cosmetics and top assembly numbers. The remote control's primary components consist of an elastomeric keypad, a PCB that houses the functional electronics, and enclosures that embody the assembly. The remote control is powered by three AAA batteries.

Keypad

The keypad is the user input mechanism for the remote control. The keypad has an elastomeric sheet with formed buttons which protrude through holes in the bezel to form individual keys. Each of these keys has printing on them to indicate which parameter it controls. This elastomeric sheet is sandwiched between the bezel and the PCB. Metallic snap domes are mounted beneath each key to make electrical contact with traces on the PCB when depressed.

Remote PCB

The Remote PCB houses components that serve an assortment of purposes. These components include, but are not limited to, contact traces to create signals, a microprocessor with onboard Flash RAM to process the signals, and IR transmitters to emit the signals. Additionally, the PCB houses a photo-detector to sense low ambient light conditions, and blue LEDs to illuminate the elastomeric keys.

Enclosures

There are two enclosures in the remote control assembly: the front bezel, and the base. The bezel is molded from an IR transparent grade of polycarbonate. This material is molded inside a thin sheet of polycarbonate. For aesthetic reasons, this film has artwork printed on the back side prior to molding. The bezel face has holes that match the shape of each of the keys so that the keys protrude through them when assembled. Additionally, there is a hole in the molded plastic that does not extend through the artwork that allows the transmission of visible light for activation of the previously-mentioned photo detector. The back side of the bezel has a locating post and screw bosses to allow for the mounting of the PCB. There is also a pair of threaded inserts heat staked into the post for the fastening to the base.

The base covers the back side of the remote control. Its exterior is mostly covered with an over-molded elastomeric material that increases friction with the users hand as well as with the surface on which it is resting. An uncovered portion is used to mount the product label. The interior surface has features to house battery contacts and the batteries themselves. Captive fasteners are also mounted to the base for fastening it to the bezel to hold the assembly together.

Operational Description

When the user depresses a key on the elastomeric keypad a signal is generated. This signal is then translated into infrared (IR) digital signals, based upon the USB standard 101-keyboard key codes, and transmitted out the front side of the remote assembly. The IR receivers and supporting electronics in the *Constellation** system's front

panel display receive and interpret these keyboard signal codes and provide the signal to adjust the desired parameters.

Keypad Activation

When a user applies force on a given key, the elastomeric material deflects inward and applies pressure on the metallic snap dome mounted on the PCB. When a sufficient force is applied, the snap dome flips over center and contacts a series of parallel traces on the PCB. This contact closes a circuit on the PCB that sends a signal to the microprocessor. Each key has a dedicated circuit so that the microprocessor can detect which key is depressed.

Signal Processing

When a signal arrives from one of the keypad circuits, the microprocessor receives the signal and, using the software algorithm stored in the flash RAM, sends out a unique coded signal to the IR transmitters mounted on the front edge of the PCB.

IR Transmission

The IR transmitting LED's send out infrared digital code which is unique for each key depression. This signal passes through the IR transparent material of the bezel and is received and processed by the tabletop.

Illumination

The remote control keys are illuminated during low light conditions. Blue LED's on the PCB are located beneath each key pad, and the elastomeric material of the keypad is semi-translucent. As a result, the light from the energized LED's causes the keys to glow.

Keypad illumination can be triggered either manually or automatically. Manual illumination occurs when the user depresses one of the illumination keys located on the side of the remote control enclosure. In this case the depressed key activates a momentary switch mounted on the PCB. This switch completes a circuit that sends a signal to the microprocessor which in turn completes a circuit to energizes LED's located beneath each key. Automatic activation of the illumination is triggered by the photo-detector mounted on top of the PCB. Light is allowed to penetrate through a window in the bezel directly above the photo-detector. When both the detected light level falls beneath the given threshold and any key is depressed, the microprocessor completes a circuit and the LED's are energized.

Remote Control Channel Selection

The remote control can be configured to operate on one-of-four channels. This feature allows four remote controls to independently control four *Constellation** systems operating in the same room or area. Remote controls are factory preset to channel A. For proper remote operation, the *Constellation** system must be set to the same channel as the remote. See operator's manual for instructions.

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Constellation* / PurePoint* Laser

The *Constellation** System has two methods of laser interface, and in both of these schemes control of the laser settings (power, exposure, etc.) is made through the *Constellation** System's user interface by means of its touch screen.

- **Tethered Console** - In this configuration a complete *PurePoint** Laser console is positioned close to the *Constellation** System, and operates in a "tethered" capacity by means of an ethernet cable connection.
- **Internal Laser Core Module** - The *Constellation** System uses a standard *PurePoint** Laser "core module" as the main electro-optical component, mounted and contained within the base assembly of the *Constellation** System. The core module consists of an optics block assembly and two principal circuit boards. More detail can be found in the *PurePoint** Laser Service Manual.

Core Module Interface - To interface the standard *PurePoint** Laser core module into the *Constellation** System chassis, a number of mounting panels and air-ducts are added within the lower base assembly. Within the mounting duct-work are two circuit boards:

- **Extender PCB** - A portion of this PCB is spring-mounted and has flexible electrical traces that allows a section of the board to "float." This arrangement provides some flexibility to allow the Extender PCB's main 72-pin connector to mate properly with the corresponding connector on the core module. It is through this 72-pin connector interface that all control signals are directed to tether the core module to the *Constellation** System.

- **Breakout PCB** - The Breakout PCB contains the connectors, drivers, and signal protection needed to attach the various external devices such as the footswitch and Dr. Filter(s). This PCB supplants the normal Rear Panel PCB used on a standalone *PurePoint** Laser console, when a core module is integrated into a *Constellation** System.

The Breakout PCB contains LED's to provide illumination of the connector region on the rear panel. All external connections are protected by surge-suppression components and filtered with RF beads. The external interfaces include:

- **Footswitch:** The Breakout PCB provides +12 V to the footswitch through a common-mode choke. The return signals from the four individual switches within the footswitch are pulled up to +12 V when the associated switch is closed, and these signals are level-shifted to 5 V logic levels and transmitted to the Controller PCB. The 12 V signal from the normally-open main switch is used to power the shutter driver (located on the Bottom Sensor PCB), such that the shutter cannot open unless the footswitch is connected and depressed.

- **Doctor Filter:** Two doctor filter connections are provided. Each connection is powered with 5 V and provides both normally open and normally closed connections that are transmitted to the Controller PCB from the Power Driver PCB.

- **Interlock:** This is typically used for a safety door-interlock, if desired by the user. In order for the laser to operate, external connections between J3 pins 1 to 6 must be in place. If these external connections is broken, the processor stops all laser emission. Typically, a jumper plug is inserted to make the connections, or the

user may elect to wire to a door switch.

- **Laser Ready:** P2 pins 1 and 9 are connected within the system through a relay when the laser is in Ready or Firing mode. Connection through these two pins can be put in series with an external lamp to provide an external indicator that the laser is firing, or could be firing at any time. The current path through the relay is protected with fuse F4 within the Core Module.

The Constellation Core Module is identical to the *PurePoint** Core Module with one exception that the internal ethernet communication cable is routed differently. The cable itself is identical between the two, but in the *PurePoint** module runs from Planet PCB to Rear Panel PCB, and in Constellation module from Planet PCB to Controller PCB.

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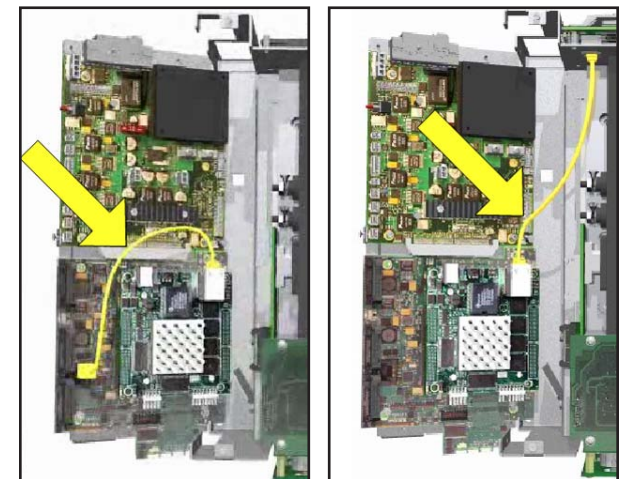


Figure 2-25 Cable Routing - On left is cable from Planet PCB to Controller PCB (*Constellation** System), and on right is cable from Planet PCB to Rear Panel PCB (*PurePoint** Laser).

Base Switch

The Base Ethernet Switch, located in the base assembly portion of the system, is the module that allows communications between all the modules in the console and base assemblies (auxiliary illuminator and laser). It serves as an extension to the console's supervisor. The Base Ethernet Switch contains five 10/100 Mbps fast Ethernet ports fully compliant to the IEEE 802.3u standard. The shared memory based switch fabric is a fully non-blocking configuration. All ports are interchangeable and not specifically addressed.

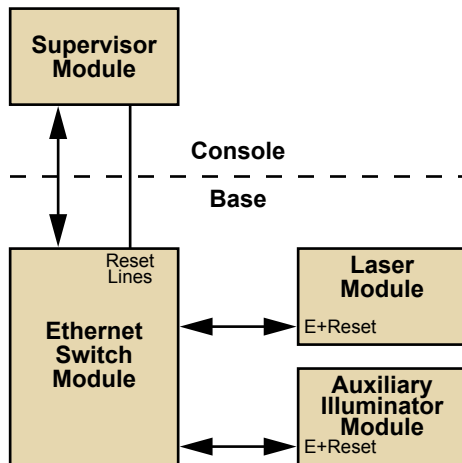


Figure 2-26 Ethernet to Base Switch

Figure 2-26 is an overview of the Ethernet connection from the supervisor through the base switch to the laser and auxiliary illuminator modules. Figure 2-27 shows the base switch.

5-Port Ethernet Switch Controller

The switch controller contains five transceivers, five media access control units, a high-speed non-blocking switch fabric, a dedicated address lookup engine, and an on-chip frame buffer memory. The switch controller is initially reset by passive power on a reset circuit. It is configured as a 5-port integrated switch. The switch controller can also be programmed to perform more advanced features by being configured from the EEPROM.

I²C EEPROM

The EEPROM can store advanced features like broadcast storm protection and rate control. If the EEPROM is programmed, the switch controller will load the information from the EEPROM via an I²C bus on power up.

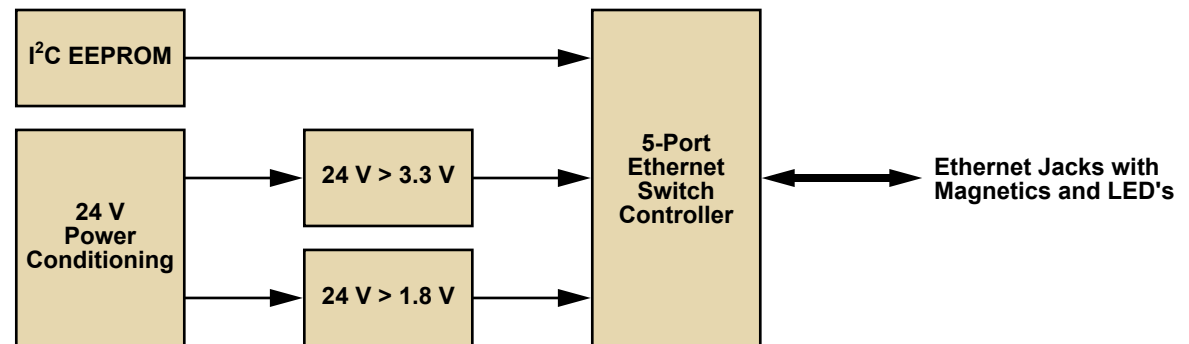


Figure 2-27 Base Ethernet Switch

Power Conditioner

The power conditioner provides conditioned, clean, 24 VDC power to the step-down switching regulators. Over-current protection, over-voltage protection, and noise-filtering circuits are used in this section to protect the board and produce clean 24 VDC for the module.

Step Down Switching Regulator – 24 V to 3.3 V

The step down switching regulator generates 3.3 V at 1.4 A max to power the LED's, the I/O circuitry on the Ethernet switch controller, the EEPROM, and the digital side of the Ethernet magnetics. It also generates analog 3.3 VA to power the physical layer side of the Ethernet magnetics.

Step Down Switching Regulator – 24 V to 1.8 V

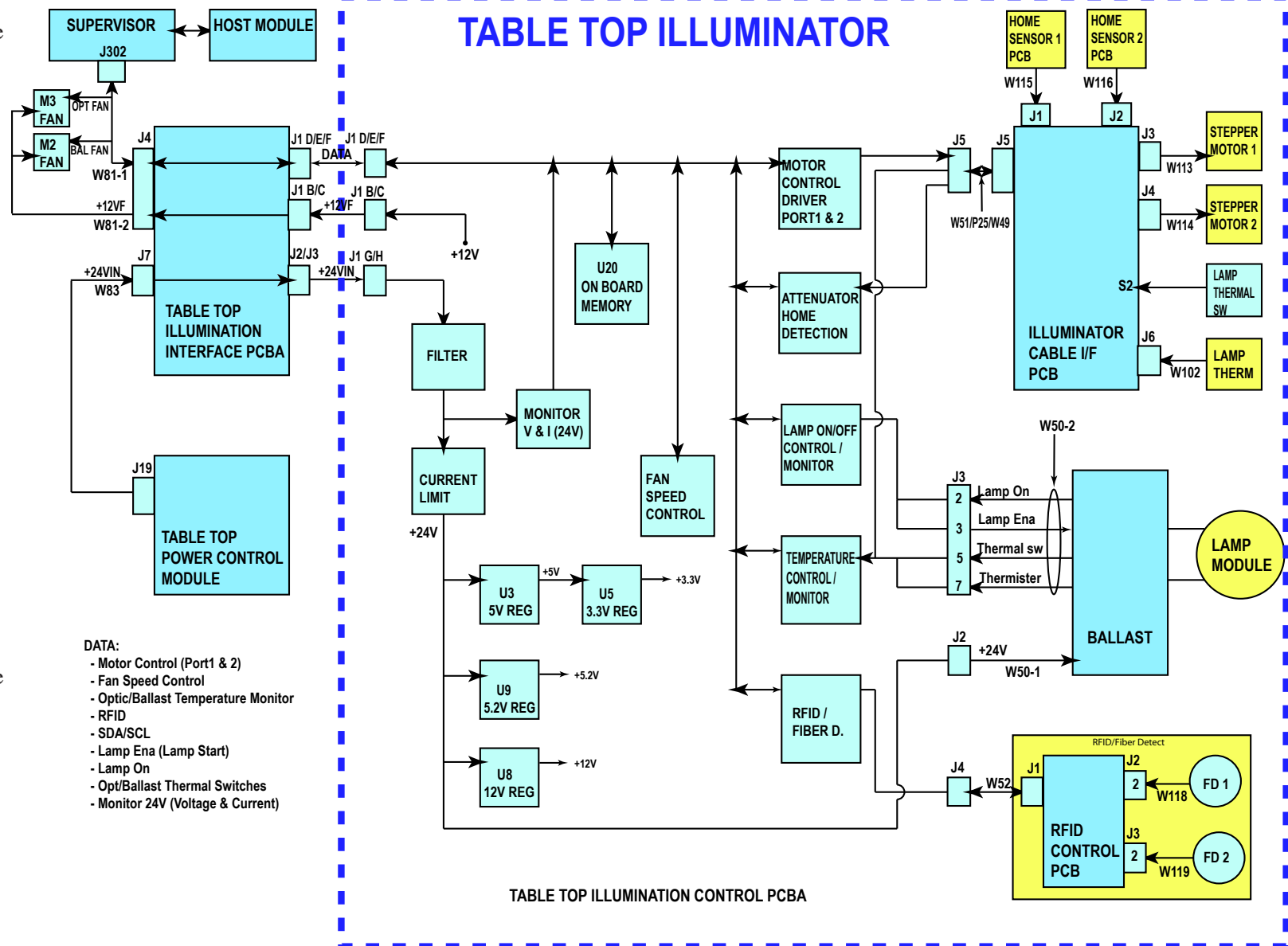
The step down switching regulator generates 1.8 V at 1.4 A max to power the core circuitry in the Ethernet switch controller, and analog 1.8 VA to power the physical layer portion of the Ethernet switch controller.

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Table Top Illuminator

The Table Top Illuminator is controlled by the kernel located on the Supervisor PCBA. It communicates through the Table Top Illumination Control PCBA which contains all the appropriate connector interfaces, drivers, and signal conditioning circuitry. All power and communication signals between the Table Top Illuminator and the Table Top Power Control Module, Supervisor and Host Module are established through the Table Top Illumination Interface PCBA (Float PCBA).

Figure 2-28
Table Top Illuminator Block Diagram



Optics Module

The Optics Module produces, filters, and focuses light into the ACMI output ports of the Tabletop Illuminator module. The Optics Module has a sigma shaped layout that offers a dual channel output from a single light source (see Figure 2-29).

Ballast Operation

The system utilizes a 24VDC power buss architecture delivering 24VDC distributed power to all the modules. The ballast operates from this 24 VDC power buss sourcing power to a 75 watt Xenon lamp. Allowing for design margin as the lamp ages, the ballast is capable of providing 100 Watts operational power.

To ignite the lamp, the ballast generates a 25kV starting voltage dropping to an 80 VDC open

circuit voltage as the arc in the lamp is initially established. As the arc plasma is established, the ballast output drops to an operational level. The constant current level delivered to the lamp is adjustable permitting the factory setting of the lamp's operational power level.

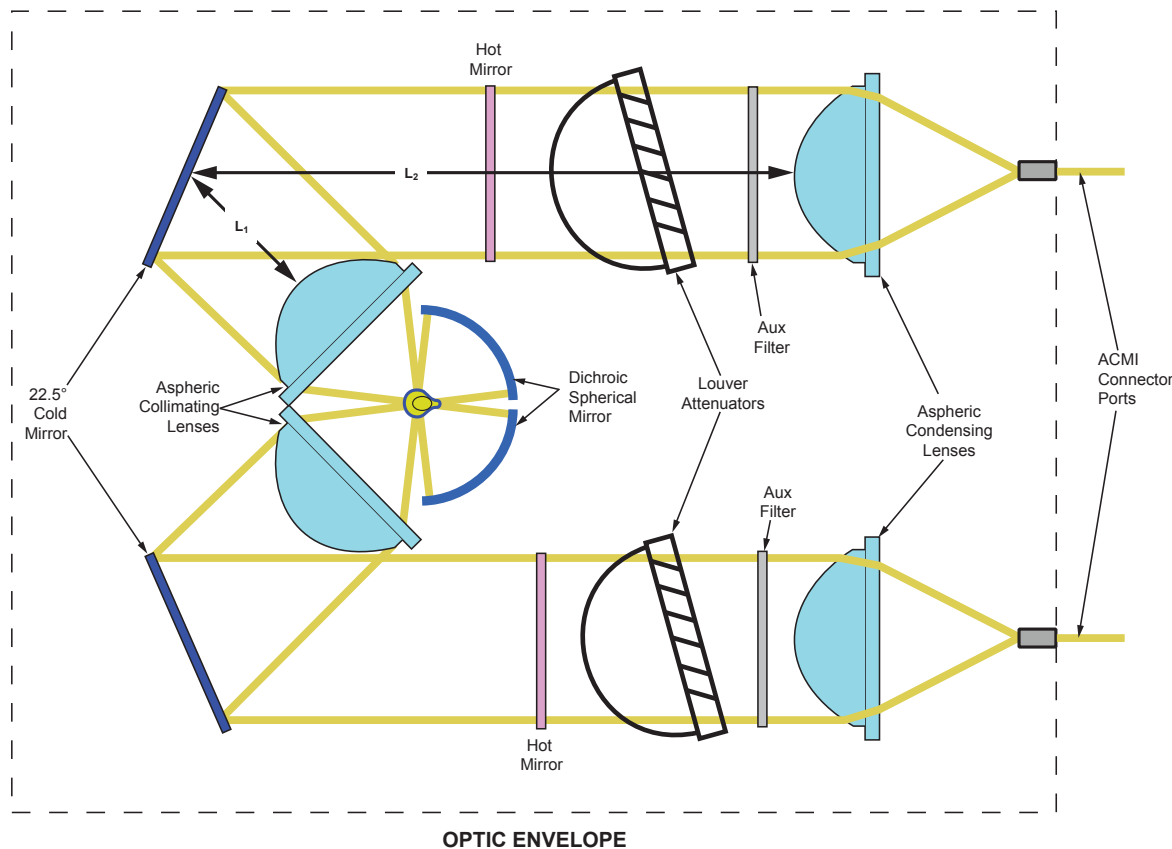


Figure 2-29. Table Top Illuminator Optics Module

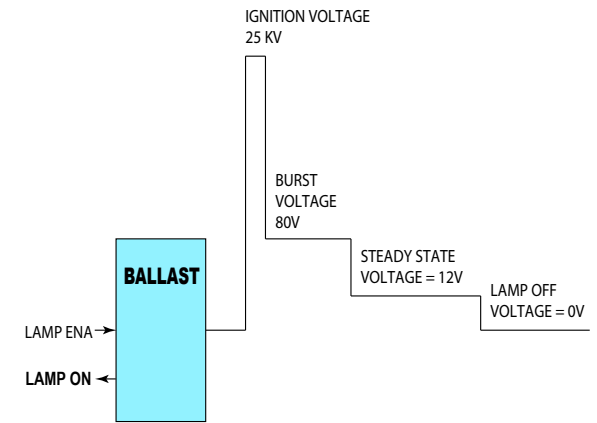


Figure 2-30. Voltage Applied to Lamp

Table Top Illumination Control PCBA

The Table Top Illumination Control PCBA performs the following functions:

- 24 V power filtering and DC power conversion
- Lamp/ballast power monitoring.
- Optics and ballast temperature monitoring; fan temperature control
- Attenuator home position detect interface
- Stepper motor driver
- Lamp switching and status monitoring
- Optics and ballast over-temperature condition detect
- Illuminator drawer in/out monitoring

RFID PCB

Radio Frequency Identification (RFID) is a technology that allows one piece of equipment equipped with a reader to detect another piece of equipment equipped with a “tag” using radio frequency communications. The RFID block diagram is shown in Figure 2-31.

An RFID system consists of a transponder (tag), antenna, RF multiplex, transceiver, microprocessor, power, and host CPU. These serve to store, transmit and read/write information from/to identification tags. The transponder (tag) stores unique information for each non-electrical probe. The antenna emits and receives radio signals to activate the tag and read/write data from/to them. The RF multiplex serves to multiplex N-channel (2) antenna signals to one and maintain the same impedance. The antennas are activated in different time slots. The transceiver controls reading, writing and communications.

A timing sensitive communication air protocol is used to accomplish the communication and prevent collision among multiple tags. The microprocessor serves as central control. It sends commands to the transceiver to properly configure it, adjust the RF front end parameters, and carry out the communication air protocol. The operating frequency of the antenna and transceiver is 13.56 MHz. The host CPU commands the RFID module to communicate with each RF tag and process the acquired data.

Ring Illumination

Ring illumination is provided on each of the illuminator ports. Each ring is composed of 12 Led's. Each LED is comprised of three colors which can be mixed to indicate different situations. The three colors are: **GREEN** (signals proper connection), **BLUE** (prompts the user to connect to this port), and **YELLOW** (signals wrong connection).

RFID CONTROL BLOCK DIAGRAM

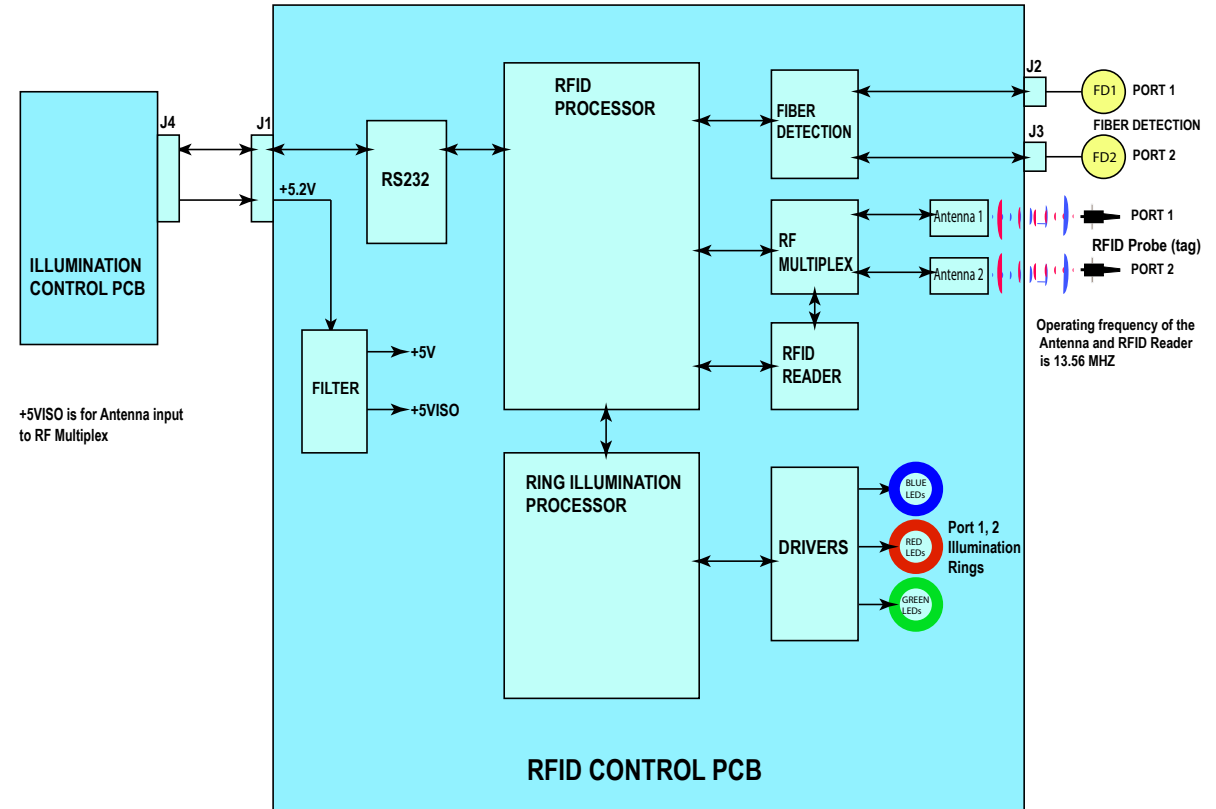


Figure 2-31. RFID Block Diagram

Illuminator Probe Detect

The illuminator probe detect components are located on this PCB. The signal from the detector circuit is decoded and passed to the supervisor in the NGVS console via the Illumination Control PCBA.

Auxiliary Illuminator Module

While the Table Top Illuminator is controlled by the Kernel located on the Supervisor, the Auxiliary Illuminator is controlled by the Kernel located directly on the Auxiliary Illuminator Control PCBA (see Figure 2-32). All power and communication signals between the Auxiliary Illuminator and the Constellation Base Switch

assembly, Table Base Interconnect, Supervisor and Host Module are established through the Auxiliary Illumination Blind Mate connector (Float PCB).

The Auxiliary Illuminator has the same primary components as the Table Top Illuminator. Refer to the Table Top Illuminator for details of Theory of Operation.

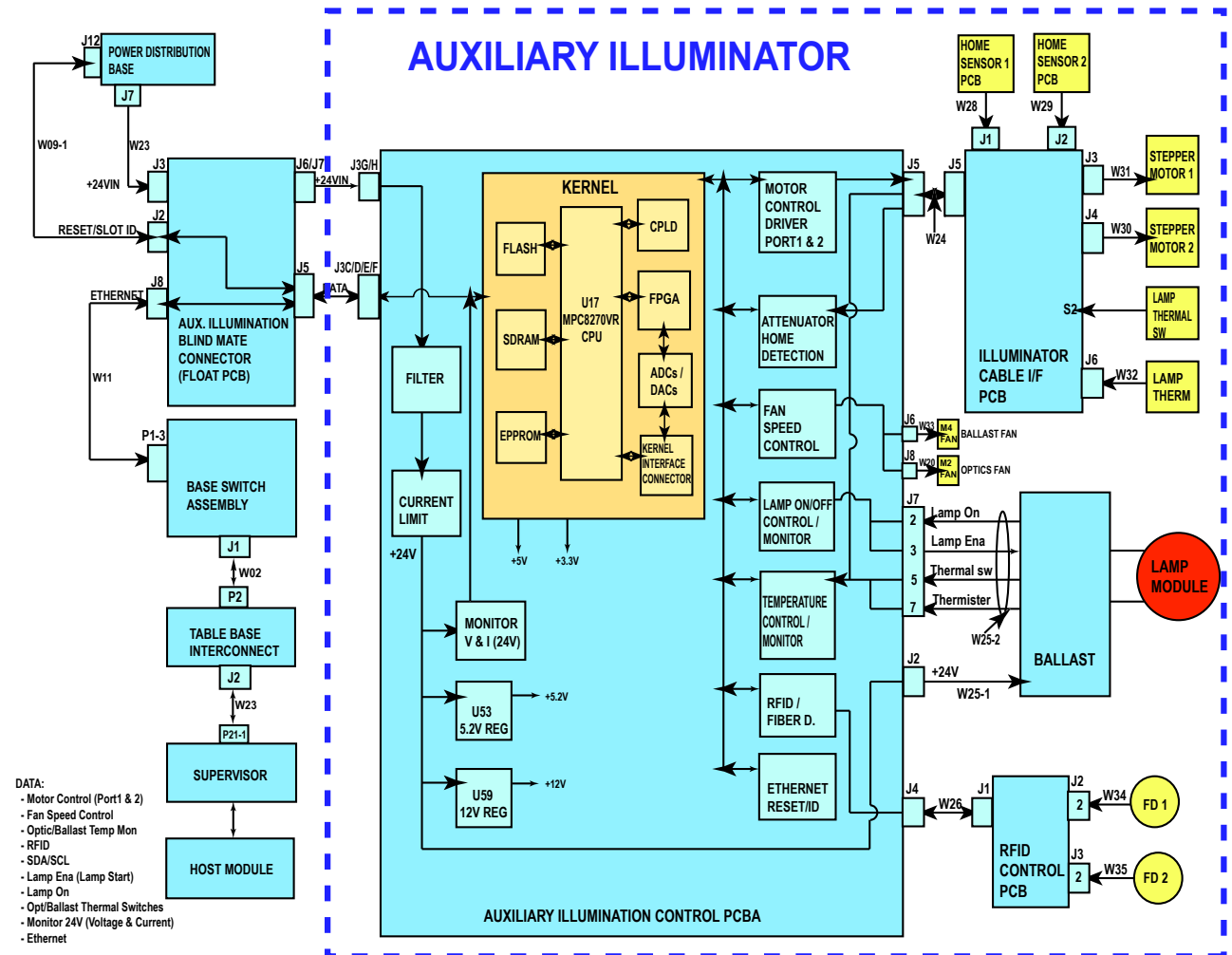


Figure 2-32
Auxiliary Illuminator Block Diagram

SECTION THREE PARTS LOCATION AND DISASSEMBLY

Introduction

Alcon's *Constellation*[®] Vision System contains several modules inside the Tabletop and Base assemblies. The instructions in this section of the manual are written to help you remove and replace these modules.

WARNING!

Before performing any internal service you must verify system power is turned OFF and power cord is disconnected from power source.

CAUTION

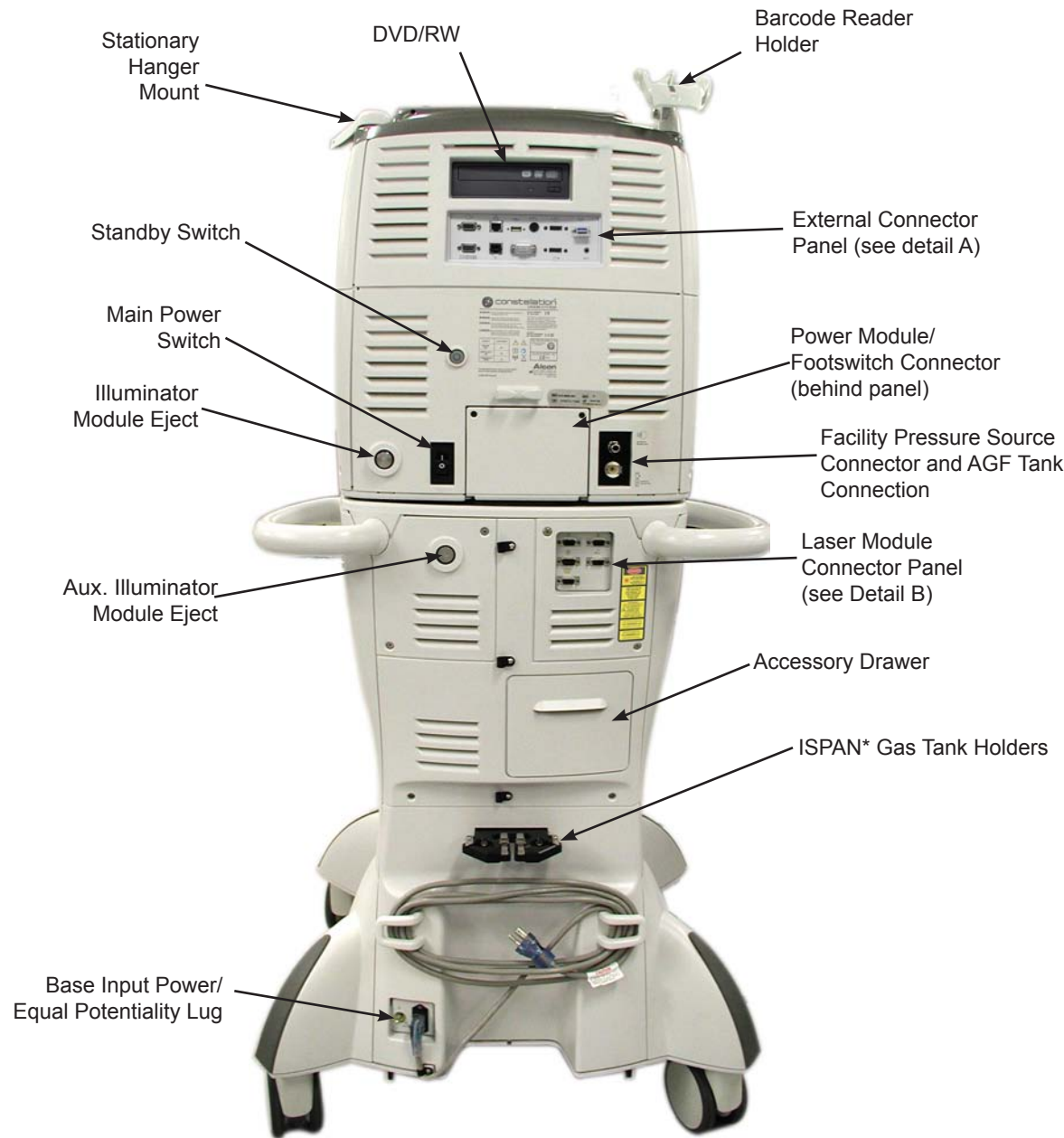
The *Constellation*[®] Vision System contains electrostatic discharge (ESD) sensitive devices. Always wear a wrist strap when working with this device.

NOTES:

- All references to "left" and "right" are directed with the user facing the front of the system.
- PCBs and assemblies may have a -55x suffix in the part number. This indicates a ROHS compliant part.



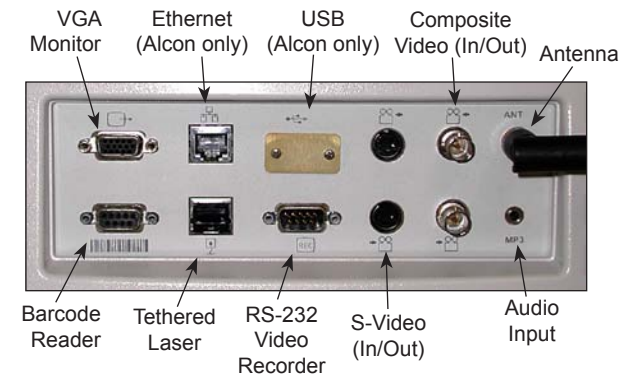
Figure 3-1 Parts Location - System Front View



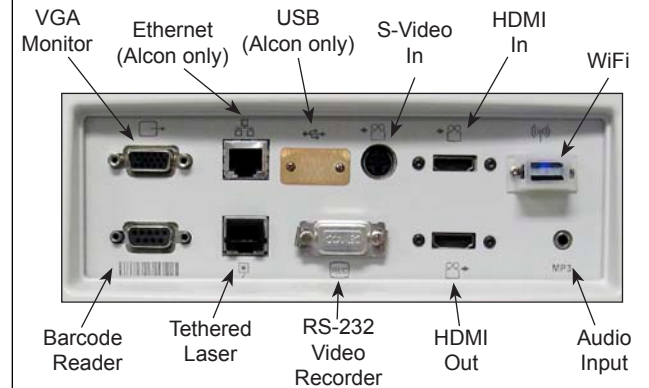
DETAIL A

(System will use one of the two connector panels shown below)

A-1



A-2



DETAIL B

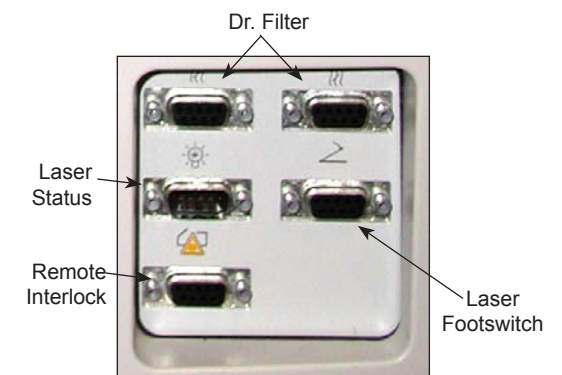


Figure 3-2 Parts Location - System Rear View

TABLE TOP CONSOLE DISASSEMBLY INSTRUCTIONS

1. Top Cover Removal (see Figure 3-3)

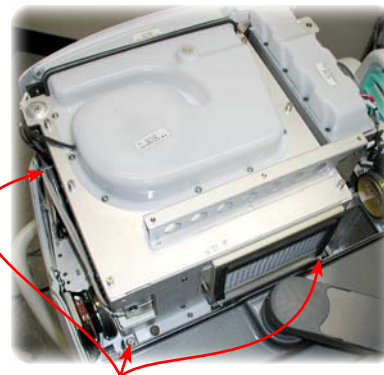
- 1.1 Remove stationary bottle hanger, and barcode scanner holder, by turning each until their alignment pins reach slots that allow them to be removed up and out of the sleeves in their holes (alignment pins and slots are not visible until removed, so you must judge their alignment by feel).
- 1.2 Loosen a captive hex screw in each of two holes that held barcode scanner and bottle hanger.
- 1.3 Remove top rubber mat to expose four captive hex screws. Loosen all four screws.
- 1.4 Lift cover off tabletop console.

2. Host Module - Removal from Table Top Console

- 2.1 Remove top cover per step 1.
- 2.2 Loosen three captive hex screws securing Host Module to tabletop frame (see Figure 3-4). Tilt Host module up and towards back of system.
- 2.3 *Rear panel removal is optional and provides easier access to cables.*
To remove rear panel from Host module, remove two hex screws from left side, and four hex screws from right side of rear panel (screws are circled in Figure 3-5). Remove rear panel.



Figure 3-3 Remove Top Cover



Loosen three captive screws so Host can be tilted up from tabletop frame.

Figure 3-4 Host Module Captive Screws

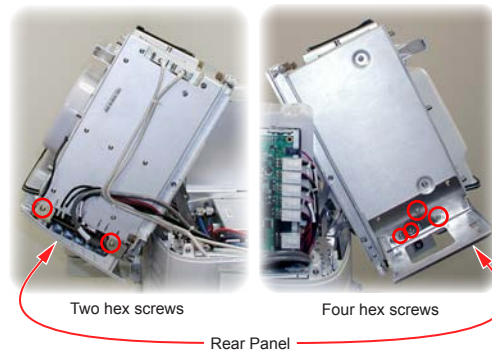


Figure 3-5 Screws Securing Rear Panel to Host Module

- 2.4 Disconnect cables from Host assembly and Supervisor (see Figure 3-6 for locations):

- W12 (A2AJ2) on Host
- W13 (A2AJ3) on Host
- W14 (A2BP6) on Host
- W15 (A2BP7) on Host
- W46 (A2BP19) on Host
- W16 (A2PB1) on Host
- W17 (A5A-P22-4) on Supervisor
- W27 (A5A-P22-3) on Supervisor

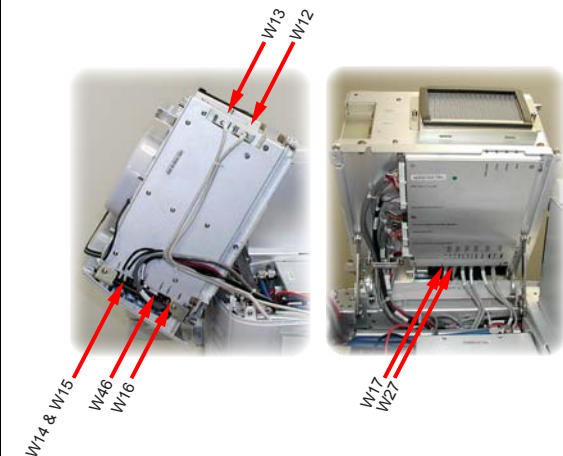


Figure 3-6 Remove Rear Panel From Host

- 2.5 Tilt Host back into its resting position.
- 2.6 Cut tie-wraps securing cables to side of Host assembly. When reassembling, secure cables with tie-wraps where shown in Figure 3-6.
- 2.7 Loosen four captive hex screws securing Host to tabletop frame.
- 2.8 Lift Host up and out of tabletop console.

REPLACEMENT: If the Host module is being replaced and the old hard drives are still working properly, it is recommended to swap the hard drives per step 5 in order to maintain the current system and doctor settings.

3. Host Fan Removal

The fan on top of the Host also serves as the Host top cover. Removing the fan allows access to the Host's internal components.

- 3.1 Remove top cover (step 1).
- 3.2 Disconnect cable W39 (A2BP14) from rear of Host (see Figure 3-7).
- 3.3 Loosen six captive hex screws securing fan/cover to top of Host.
- 3.4 Lift fan/cover up and off Host assembly.



Figure 3-7 Host Fan/Cover

4. DVD Drive Removal From Host

- 4.1 Remove top cover (step 1) and fan (step 3).
- 4.2 Unplug Power and Data cables from DVD (see Figure 3-8).
- 4.3 Loosen two captive hex screws securing DVD player mounting plate (white circles in Figure 3-8).
- 4.4 Slide DVD player with mounting plate out from Host.

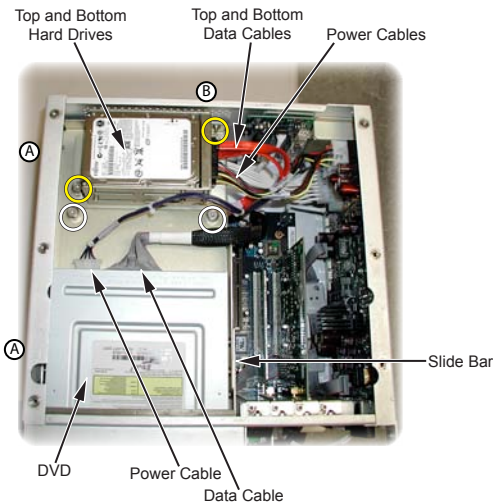


Figure 3-8 DVD and Two Hard Drives

5. Hard Drive(s) Removal From Host

- 5.1 Remove top cover (step 1) and fan (step 3).
- 5.2 Unplug Power and Data cables from hard drives (see Figure 3-8). The Data cables must be properly labeled as TOP and BOTTOM to ensure they are replaced into the correct drives.
- 5.3 Loosen two captive hex screws securing hard drives mounting plate (yellow circles in Figure 3-8).
- 5.4 Remove hard drives from mounting plate.

6. Remove DVD/Hard Drive Mounting Plate

- 6.1 Remove top cover (step 1), fan (step 3), DVD (step 4), and Hard Drives (step 5).
- 6.2 Loosen two captive hex screws securing screen/filter to front of Host assembly and remove.
- 6.3 Loosen three captive hex screws securing Host assembly to tabletop frame (see Figure 3-4). Tilt Host up and towards back of system.
- 6.4 Remove two screws securing mounting plate to side of Host (labeled A in Figure 3-8).
- 6.5 Remove one screw securing mounting plate to end of Host (where screen/filter was mounted, and labeled B in Figure 3-8).
- 6.6 Loosen two screws securing slide bar to side of mounting plate, then slide the bar backwards to release mounting plate from Host (location of slide bar shown in Figure 3-8).
- 6.7 Remove mounting plate from Host.

7. Host Components Removal

- 7.1 Remove top cover (step 1), fan (step 3), DVD (step 4), hard drives (step 5), and DVD/Hard Drive mounting plate (step 6).
- 7.2 The following Host components can be removed as required (see Figure 3-9):
 - SD RAM
 - Host Display PCBA
 - Host DC-DC PCBA
 - Video Overlay PCBA
 - WiFi PCBA (CA1/CR2 only)
 - CPU Battery

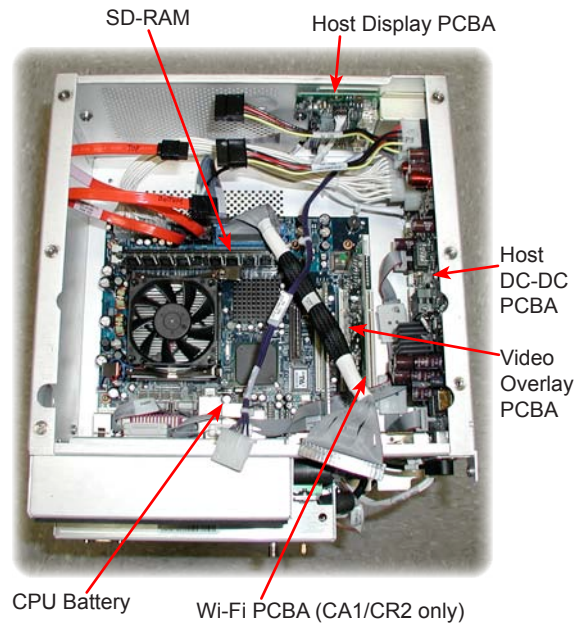


Figure 3-9 Components Inside Host

NOTE: CPU Battery replacement requires the date and time to be reset. Otherwise system message 1380 "The CPU Battery is bad..." will continue to display.

8. Expansion Panel Assembly

- 8.1 Remove six screws securing expansion panel to Host chassis (see Figure 3-10).
- 8.2 Leaving cables connected at the Host Motherboard and adjacent assemblies, disconnect cables leading from the Expansion Panel.
- 8.3 Remove Expansion Panel Assembly.

REPLACEMENT: Install replacement Expansion Panel Assembly in the reverse order. Reference Figure 3-11 for Motherboard Connections.

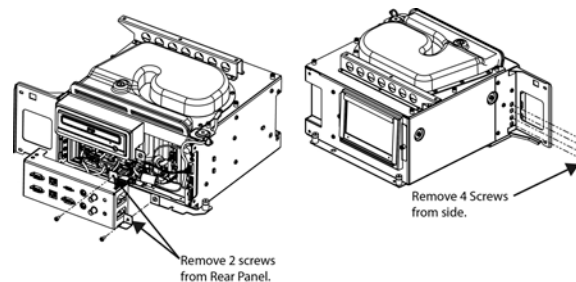


Figure 3-10 Host Expansion Panel Screws

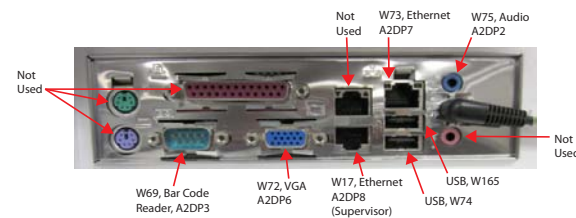


Figure 3-11 Motherboard Connections from Expansion Panel

9. Supervisor Removal

- 9.1 Remove top cover (see step 1).
- 9.2 Loosen three captive hex screws securing Host Module to tabletop frame (see Figure 3-12). Tilt Host up and towards back of system.

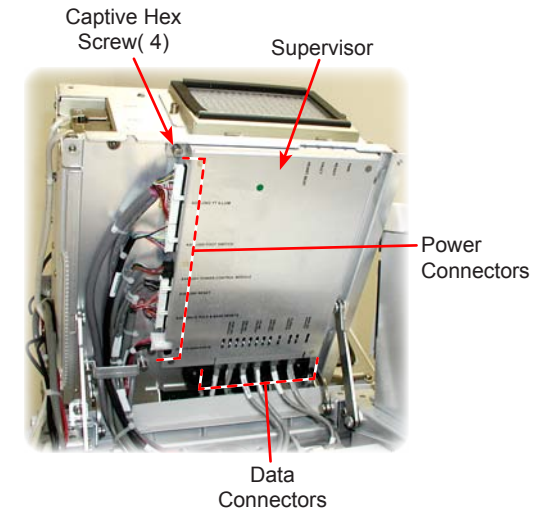


Figure 3-12 Supervisor

- 9.3 Loosen two 3 mm captive hex screws securing ethernet clamp over six data connectors across bottom. Remove ethernet clamp.
- 9.4 Unplug six cables across bottom, and six cables along left side of Supervisor.
- 9.5 Loosen four captive hex screws to release Supervisor, and remove from bottom of Host module.

NOTE: The Supervisor is always replaced as an assembly, i.e., PCB with mounting plate

10. Power Module and System Battery Removal

- 10.1 Remove top cover (step 1).
- 10.2 Disconnect cables from Power Controller PCB (see Figure 3-13).
- 10.3 Loosen two captive hex screws at front of power module, and one captive hex screw at rear (insert long hex wrench between power module and rear panel).
- 10.4 Grasp power module with both hands and lift it up and out of multi-pin connector securing it to chassis.



Figure 3-13 Power Module

- 10.5 The system battery can be removed by disconnecting battery cable from J5 on Power Controller PCB and removing velcro straps securing battery to Power Module.

NOTE: 900 W Power Supply and AC Entry PCB can be accessed by removing 6 hex screws securing cover on back of module.

11. Rear Panel Removal From Display Assembly

- 11.1 Remove nine hex screws from periphery of display's rear panel.
- 11.2 Remove rear panel from display. Several display panel components are now exposed (see Figure 3-14).

12. Touch Screen Removal

- 12.1 Remove rear panel (step 11).
- 12.2 Disconnect cable from J5 on Display Interface PCB (see Figure 3-14).
- 12.3 Disconnect cables from IR sensors.
- 12.4 With one hand securing front display panel to the frame, remove four hex screws securing display panel (screws are labeled A in Figure 3-14). Carefully remove panel and touch screen from frame.

CAUTION

Touch screen is not secured when the four hex screws are removed from display panel. Do not drop.

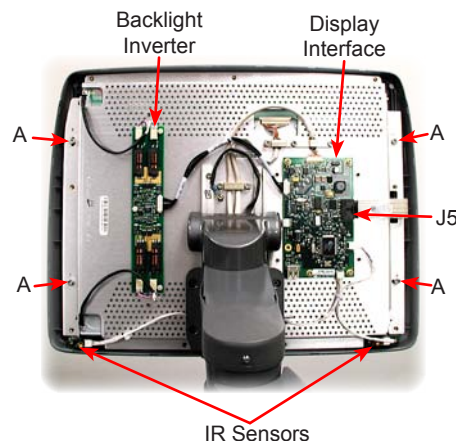


Figure 3-14 Display Assembly With Rear Panel Removed (old style LCD shown)

13. LCD Removal

- 13.1 Remove touch screen (step 12).
- 13.2 Disconnect cable W12 from rear of LCD (see Figure 3-15).

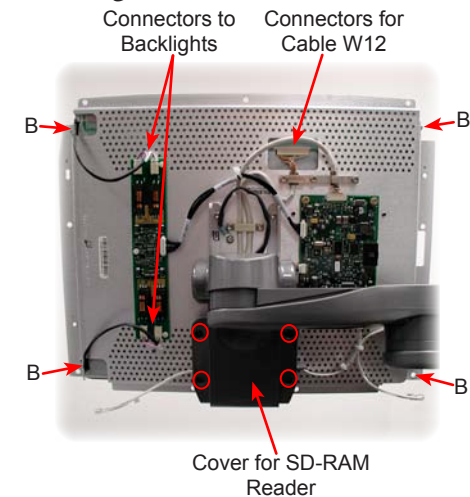


Figure 3-15 Removing the LCD

- 13.3 Disconnect cable connectors from Backlight Inverter.
- 13.4 With one hand securing LCD to the frame, remove four hex screws securing LCD (screws are labeled B in Figure 3-13).
- 13.5 Carefully remove LCD from frame.

REPLACEMENT: LCD gasket is adhered to the LCD. Be sure to order a new gasket when replacing LCD.

14. SD-RAM Card Reader Removal

- 14.1 Remove Rear Panel per step 12.
- 14.2 Remove four hex screws securing cover over SD-RAM reader (circled in Figure 3-15).
- 14.3 Disconnect cable W4 from card reader (see Figure 3-16).
- 14.4 Remove two hex screws securing card reader to frame, and remove card reader.

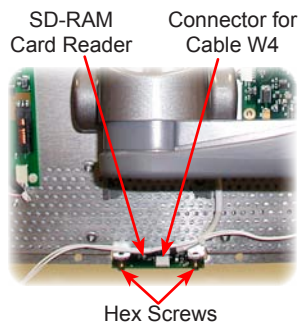


Figure 3-16 Removing SD-RAM Card Reader

15. Display Arm Assembly Removal

- 15.1 Remove Fluidics module per step 20.
- 15.2 Remove nine 3 mm hex screws securing rear display panel. Remove rear display panel.
- 15.3 Remove four 3 mm screws securing cover #1 in Figure 3-17. Remove cover from system.
- 15.4 Remove two 2 mm hex screws securing arm Cover #2 in Figure 3-17. Remove cover by carefully pushing it away from display. Cover sides will momentarily expand as it is pushed away from arm.
- 15.5 Remove two cable clamps (five 3 mm hex screws) securing cables W12 and W13 to display assembly. Disconnect W12 from LCD and W13 from Display PCB.

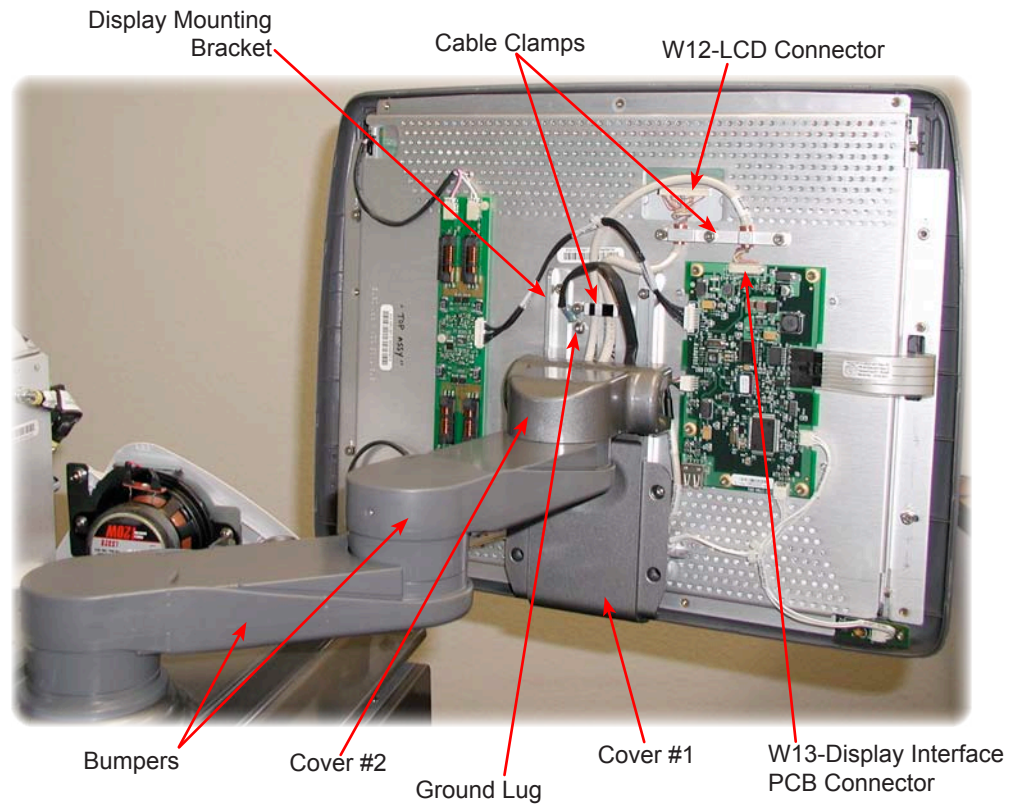


Figure 3-17 Display Arm Removal

- 15.6 Remove 2.5 mm hex screw securing ground lug to display assembly.
- 15.7 While holding display so that it does not fall, remove four 3 mm hex screws securing display assembly to mounting bracket. Remove display assembly.
- 15.8 Remove two 2 mm hex screws securing each bumper (2) to arm assembly. Position each bumper to gain access to each molded shoulder cover as shown in Figure 3-18.

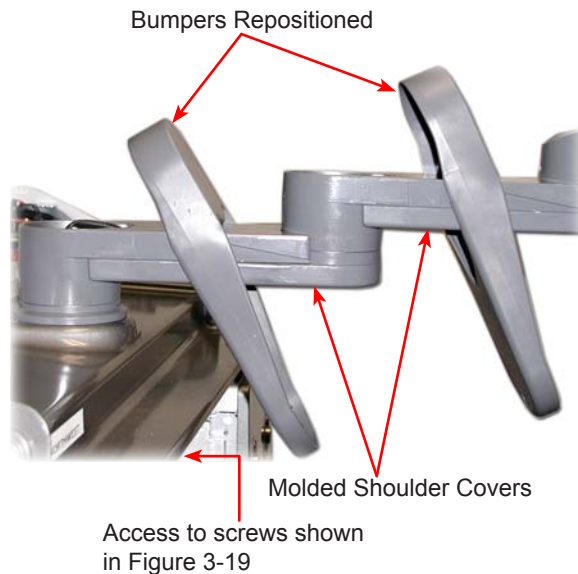


Figure 3-18 Display Arm Bumpers and Shoulder Covers

- 15.9 Remove four 3 mm hex screws securing each molded shoulder cover (2). Be sure to hold the cover when last screw is removed to prevent cover from falling.
- 15.10 Remove 3 mm hex screw securing ground lug to chassis (at tabletop chassis end of the display arm accessed from fluidics module compartment-see Figure 3-19).

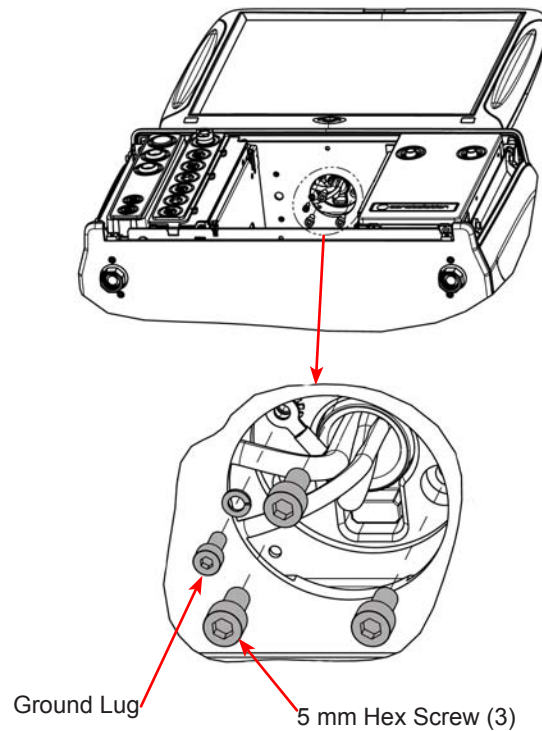


Figure 3-19 Hex Screws Securing Display Arm Assembly to Table Top Chassis (View from inside fluidics module compartment)

- 15.11 Route cables back through display arm assembly to allow remove of arm.
- 15.12 Remove three 5 mm hex screws securing display arm to table top chassis (see Figure 3-19). Be sure to hold display arm assembly when the last screw is removed to keep arm from falling to ground.

16. Front Panel Removal from Console

- 16.1 Remove top cover per step 1.
- 16.2 Press in and release tabletop filter tray to eject it from latch mechanism (see Figure 3-20). Remove filter tray.
- 16.3 Remove two hex screws exposed at bottom corners of front panel, and two captive hex screws at upper corners of front panel (all four screws circled in Figure 3-20).
- 16.4 Remove front panel.



Figure 3-20 Remove Front Panel

17. Illuminator Module Removal from Console

- 17.1 Press Eject button on tabletop rear panel to release Illuminator Module. Pull module out so that it is fully extended on the guide rails.
- 17.2 On guide rails located on each side of the module, press and hold release tabs (one up, one down) as you pull module out from the rails (see Figure 3-21).

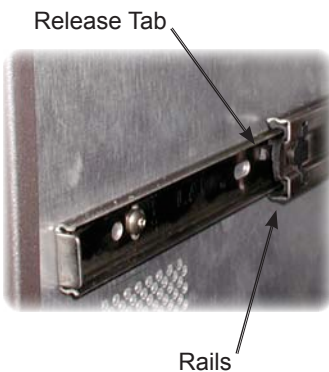


Figure 3-21 Illuminator Module Guide Rails

NOTE: Refer to Section Four for lamp replacement procedures.

NOTE: For Auxiliary illuminator see Base disassembly procedures.

18. Illuminator Top Cover and Front Bezel Removal

- 18.1 Remove lamp from Illuminator module. Place lamp in protective cover.
- 18.2 Remove nine 2 mm screws securing chassis top cover (see Figure 3-22). Remove cover.

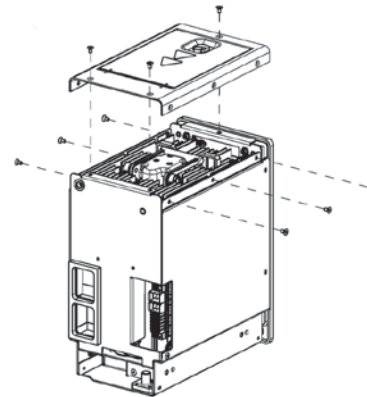


Figure 3-22 Table Top Illuminator Top Cover

- 18.3 Remove two 2.5 mm screws from under chassis, and two 2 mm screws from chassis top, and remove front cover.

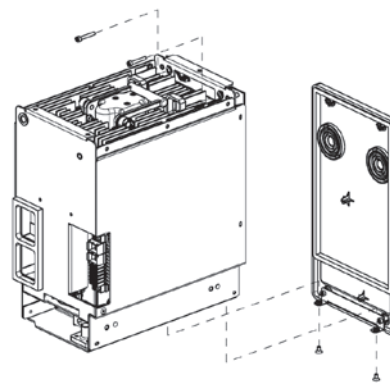


Figure 3-23 Table Top Illuminator Front Cover

19. RFID PCB Removal

- 19.1 Remove Top Cover and Front Bezel per step 18.
- 19.2 Remove four 2.5 mm screws securing RFID PCB to front of chassis. Disconnect three cables and remove RFID PCB.

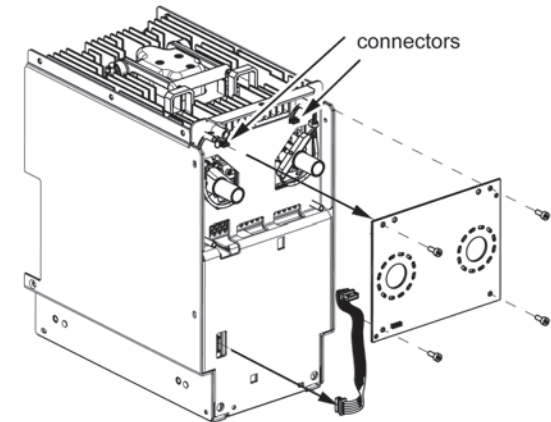


Figure 3-24 Table Top Illuminator RFID PCB

20. Rear Chassis Panel Removal

- 20.1 Remove Top Cover and Front Bezel per step 18.
- 20.2 Remove three phillips screws and remove latch bracket.

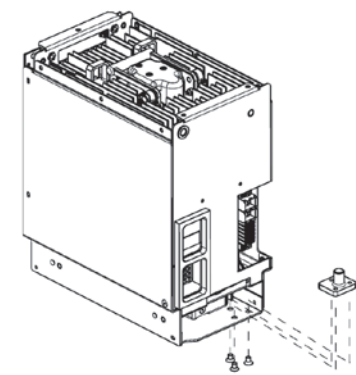


Figure 3-25 Table Top Illuminator Latch Bracket

- 20.3 Remove two 2 mm screws from rear of chassis. Remove rear chassis panel.

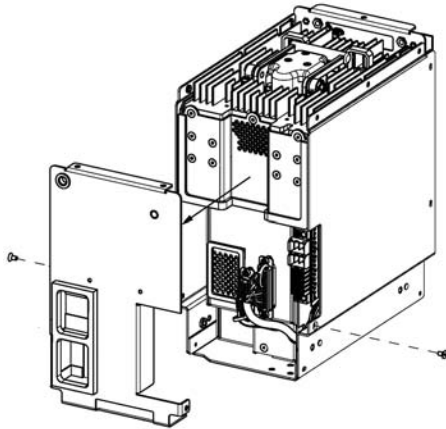


Figure 3-26 Table Top Illuminator Rear Panel

- 20.4 Remove four screws from under chassis. Remove chassis.

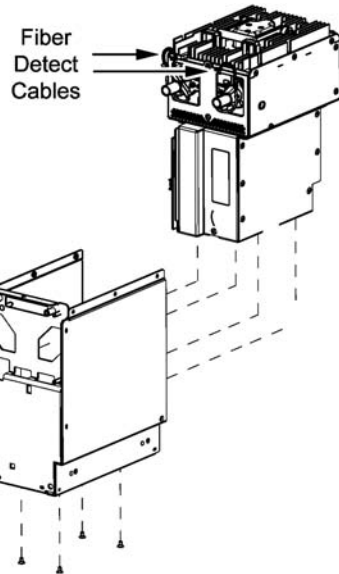


Figure 3-27 Table Top Illuminator Chassis Removal

21. Controller PCB Removal

NOTE: The Controller PCB contains metric data that should be transferred to the new PCB. Transferring of data is controlled by a proprietary procedure and can only be performed by authorized representatives.

- 21.1 Remove Top Cover and Front Bezel Per Step 18.
21.2 Remove Rear Chassis Panel per step 20.
21.3 Remove four 2 mm screws securing connectors at rear of power supply. Disconnect two cables at both ends and remove.

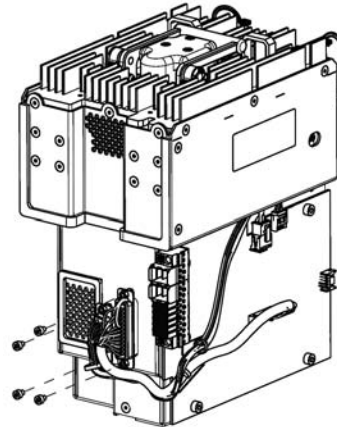


Figure 3-28 Table Top Illuminator Power Supply Connector

- 21.4 Remove four 3 mm screws securing Illumination Control PCB to power supply. Remove Illumination Control PCB.

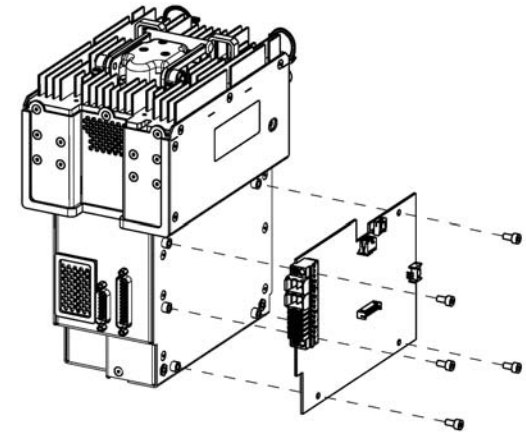


Figure 3-29 Table Top Illuminator Illumination Control PCB

22. Fiber Detection Cable Removal

- 22.1 Remove Top Cover and Front Bezel Per Step 18.
22.2 Remove Rear Chassis Panel per step 20.
22.3 Remove one 2 mm screw and remove fiber detector cable from output port. Repeat for second port.

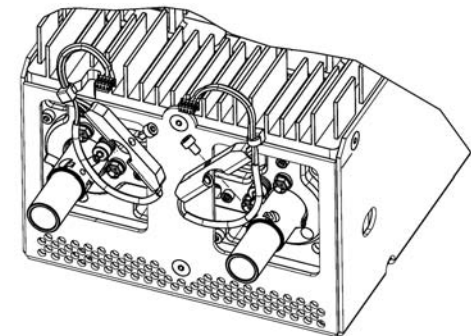


Figure 3-30 Optics Module Output Ports

23. Optics Module Removal

- 23.1 Remove Top Cover and Front Bezel Per Step 18.
- 23.2 Remove Rear Chassis Panel per step 20.
- 23.3 Remove Controller PCB per step 21.
- 23.4 Remove eight 2 mm screws securing power supply to optics module. Separate the two and carefully remove optics module.

NOTE: At this point the set screws retaining the lamp contacts (electrode tubes) are accessible through the bottom of the Optics Module. If replacing lamp contacts only, not the High Voltage Receptacle, skip to step 24.3.

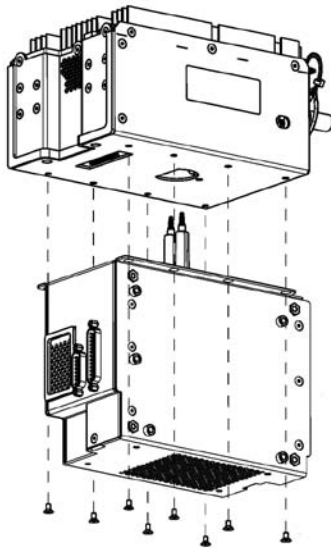


Figure 3-31 Table Top Illuminator Optics Module

- 23.5 Remove two 3 mm screws securing filter brackets. Remove brackets.

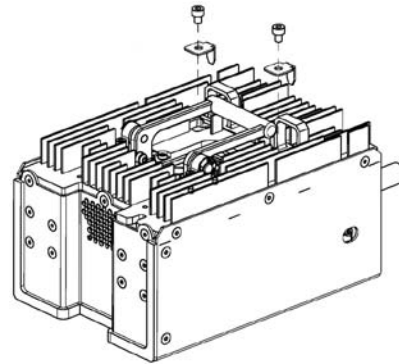


Figure 3-32 Optics Module Filter Brackets

- 23.6 Remove both filter carriers.

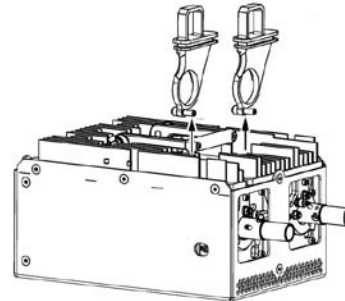


Figure 3-33 Optics Module Filter Carriers

- 23.7 Remove the nine 2 mm screws securing rear panel. Remove rear panel.

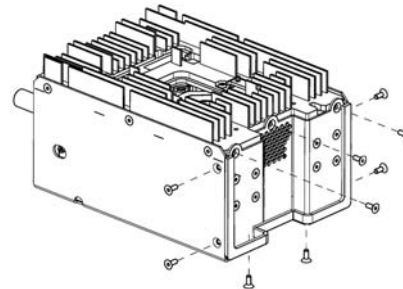


Figure 3-34 Optics Module Rear Panel

- 23.8 Remove eight 2 mm screws securing base cover to chassis. Remove base cover.

CAUTION

Avoid touching optics and attenuator vanes.

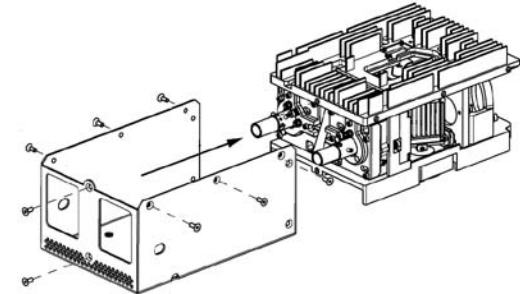


Figure 3-35 Optics Module Base Cover

- 23.9 Remove five 2 mm screws securing top cover/heat sink. Remove heat sink.

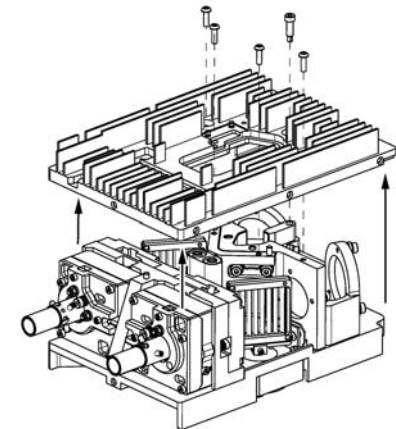


Figure 3-36 Optics Module Heat Sink

24. Optics Module High Voltage Receptacle Removal

- 24.1 Remove Optics Module per step 23.
- 24.2 Remove three 2 mm screws securing HV receptacle to chassis. Remove HV receptacle.
- 24.3 Lamp Contacts (electrode tubes) - Using a 3/16 hex wrench, loosen the two set screws retaining the lamp contacts in the HV receptacle (see Figure 3-37).
- 24.4 When set screws are completely loosened, turn the HV receptacle upside down to allow the set screws and lamp contacts to fall out. NOTE: If the HV receptacle was not removed from the Optics Module, turn the whole Optics Module upside down to allow lamp contacts fall out.

REPLACEMENT NOTES:

- Ensure proper orientation of lamp contacts as shown in Figure 3-37.
- To assist in aligning the set screws, it is helpful to use a rigid tube to center the wrench and apply pressure to start the screws (see Figure 3-38).
- Tighten set screws until they stop, then loosen one-quarter turn. This allows contacts to "float" and assist in lamp replacement.

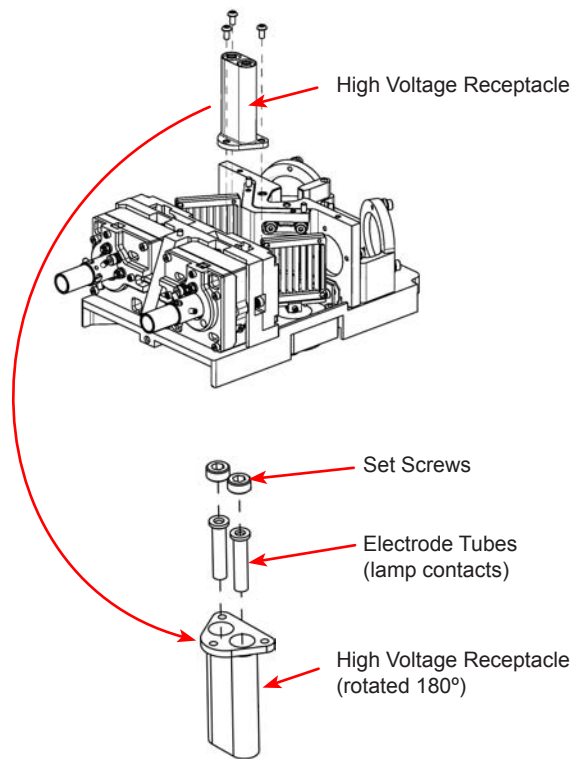


Figure 3-37 Optics Module HV Receptacle



Figure 3-38 Rigid Tube for Aligning Lamp Contact Set Screws

25. Attenuator Removal

- 25.1 Remove Optics Module per step 23.
- 25.2 Loosen 1.5 mm setscrew securing attenuator to stepper motor shaft. Ensure that gap in attenuator vane clears opto-sensor, and remove attenuator.

CAUTION

Avoid touching attenuator vanes.

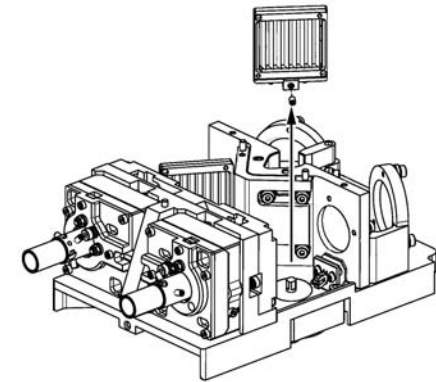


Figure 3-39 Optics Module Attenuator

26. Stepper Motor Removal

- 26.1 Remove Optics Module per step 23.
- 26.2 Remove Attenuator(s) per step 25.
- 26.3 Remove two 3 mm screws securing stepper motor to underside of chassis. Remove stepper motor.

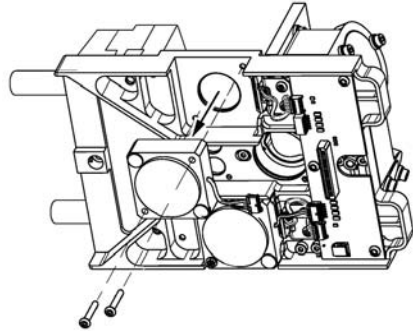


Figure 3-40 Optics Module Stepper Motor

27. Home Sensor PCB Removal

- 27.1 Remove Optics Module per step 23.
- 27.2 Remove Attenuator(s) per step 25
- 27.3 Disconnect cable that runs to Home Sensor PCB from Illuminator Cable Interface PCB.
- 27.4 Remove two 2 mm screws securing Home Sensor PCB and remove PCB.

28. Thermistor Removal

- 28.1 Remove Optics Module per step 23.
- 28.2 Disconnect thermistor cable from Interface PCB at J6. Unscrew thermistor from chassis and remove.

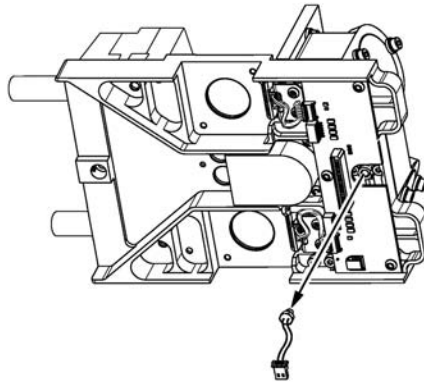


Figure 3-41 Optics Module Thermistor

29. Illuminator Cable Interface PCB Removal

- 29.1 Remove Optics Module per step 23.
- 29.2 From under chassis, disconnect attenuator sensor cables from front of Interface PCB. From top, remove 2 mm screw from thermal switch and carefully bend leads up to allow removal of Interface PCB.

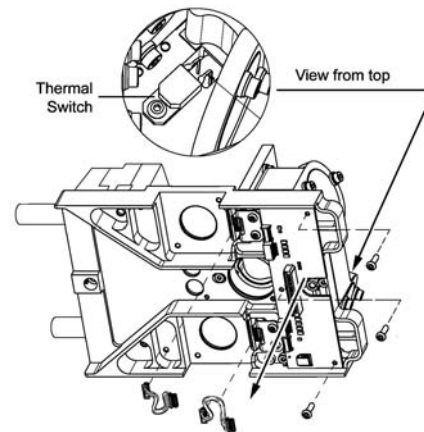


Figure 3-42 Optics Module Interface PCB Removal

- 29.3 Remove three 2 mm screws securing Interface PCB to bottom of chassis. Remove Interface PCB.

NOTE: For adjustment of the ejection cable, refer to the maintenance procedures in Section Four.

30. Fluidics Module Removal

CAUTION

The Fluidics Module interfaces with the patient fluid path. Use Universal Precautions when handling the module and its components.

- 30.1 Remove front panel per step 16.
- 30.2 Loosen three captive hex screws securing Host Module to tabletop frame (see Figure 3-2). Tilt Host up and towards back of system.
- 30.3 Loosen four captive hex screws on front of Fluidics Module (see Figure 3-43).

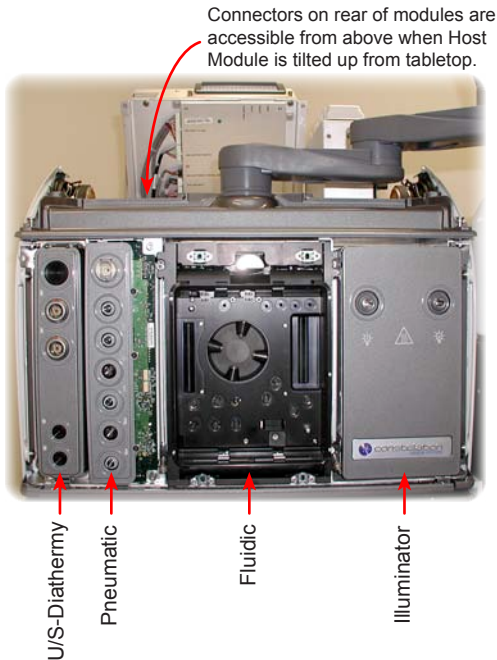


Figure 3-43 Modules With Front Panel Removed

- 30.4 Slide Fluidics Module forward to gain access to its rear panel connectors.

- 30.5 Use 11/16" wrench to remove Pneumatic tubing from back of module.
- 30.6 Disconnect W34 (power), W24 (ethernet), and W26 (slot ID) cables from back of module.
- 30.7 Slide Fluidics Module out from system.

Notes for fluidics module disassembly:

- **Covers:** There are more holes in covers than screws.
- **For hex screws 2 mm and smaller, avoid using a ball-end type hex wrench as they may strip the head of the screws.**

31. Fluidics Module Faceplate Removal

- 31.1 Remove twelve 2 mm hex screws (PN 829-001) and one 2.5 mm hex screw (PN 809-006) and washer securing top cover to module chassis. Lift cover from module.

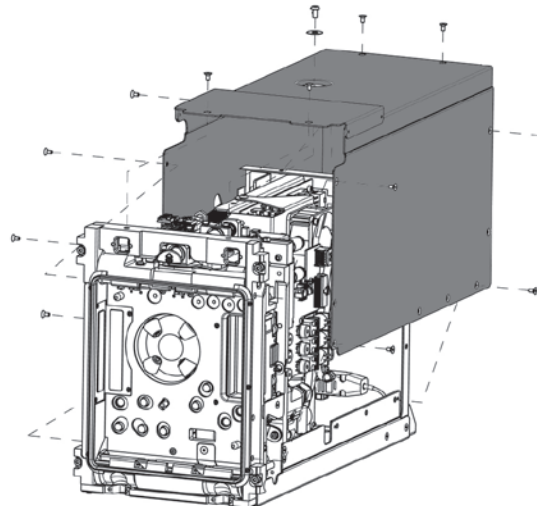


Figure 3-44 Fluidics Module Top Cover

- 31.2 Position fluidics module so that faceplate is facedown on table as shown in Figure 3-45.
- 31.3 Remove four 4 mm hex screws (PN 827-006) securing faceplate to latch mechanism. Move latch mechanism as necessary to gain access to screws. One screw may need to remain in place until the next step. See Figure 3-45.

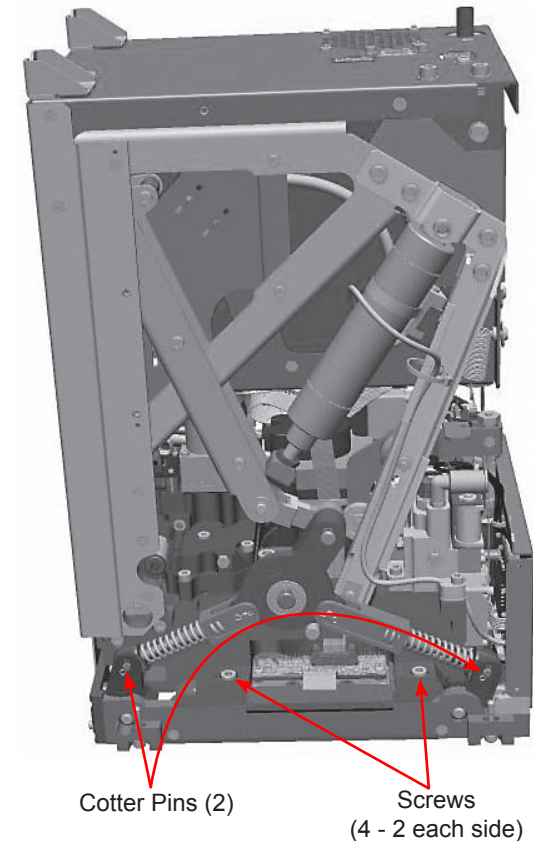


Figure 3-45 Screws Securing Faceplate to Latch Mechanism

- 31.4 Remove two cotter pins (PN 674-197) from two spacers securing latch mechanism linkage to faceplate.
- 31.5 Using a needle-nose pliers, remove two spacers (PN 212-1903-001) from latch mechanism linkage.

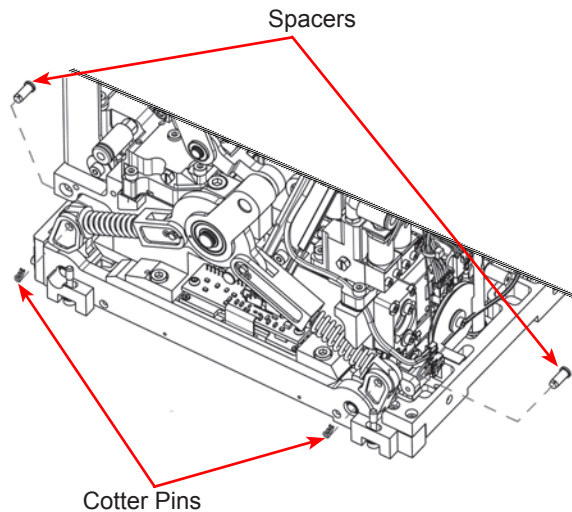


Figure 3-46 Fluidics Module Latch Mechanism Linkage Spacers

- 31.6 Remove three 2 mm hex screws (PN 829-001) securing bottom cover to faceplate (see Figure 3-47).
- 31.7 Position fluidics module so that it rests on its bottom.
- 31.8 Remove two 1.5 mm hex screws (PN 827-002) securing suction chamber glass to faceplate.

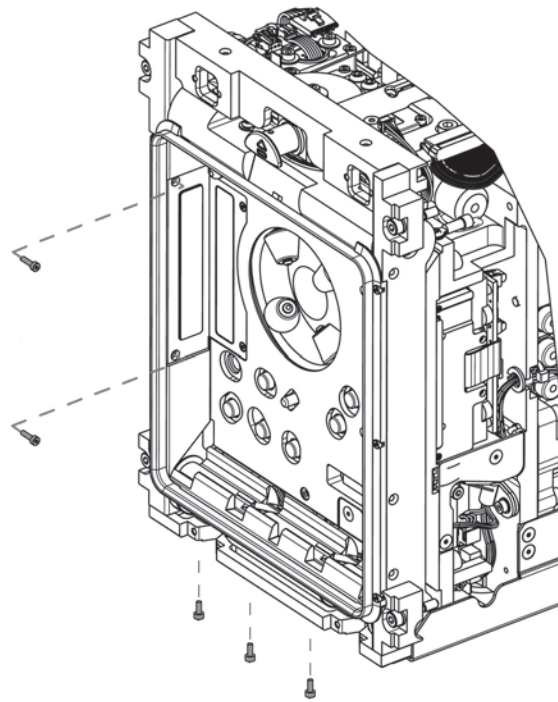


Figure 3-47 Fluidics Module Screws Securing Suction Chamber Glass and Bottom Cover to Faceplate

- 31.9 Remove front part of clamping mechanism. Carefully tap the upper and lower part of the clamping mechanism so that it slides straight forward off the guide posts that hold it in position. See Figure 3-48.



Figure 3-48 Fluidics Module: Removal of Clamping Mechanism

- 31.10 Remove two 2 mm hex screws (PN 809-001) securing grounds straps to module.
- 31.11 Remove five 2.5 mm hex screws (PN 807-004) securing faceplate to primary manifold.

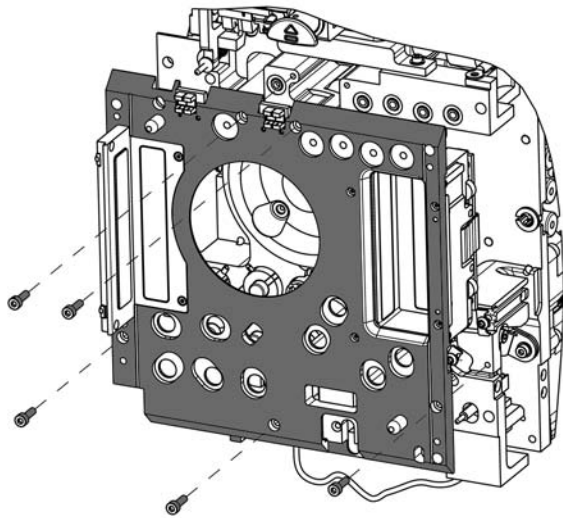


Figure 3-49 Fluidics Module: Screws Securing Faceplate to Primary Manifold

31.12 Remove one 2 mm hex screw (PN 829-001) securing NIFS access cover to faceplate. Remove NIFS cover.

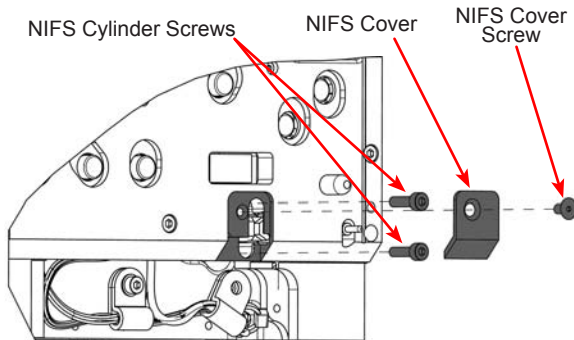


Figure 3-50 Fluidics Module: NIFS Access Cover

31.13 Under NIFS cover, remove two 2.5 mm hex screws (PN 807-005) securing the NIFS cylinder to module (see Figure 3-50). **NOTE: Screws may need to be completely removed in the next step.**

31.14 Pull faceplate away from module and remove screws from previous step.

31.15 Disconnect A9FP1 from the Cassette ID PCB, A9EP2 from Suction Light PCB, and A9P2 and A9DP4 from Infusion Light PCB.

31.16 Ensure o-rings stay in the manifold. If o-ring sticks to faceplate, remove and place back in manifold.

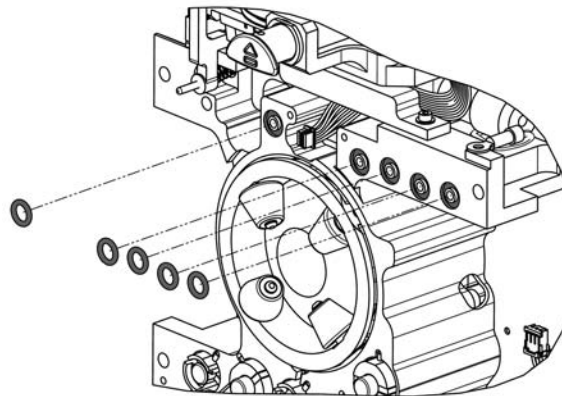


Figure 3-51 Fluidics Module: O-rings

32. NIFS (Non-Invasive Flow Sensor) (PN 212-2251-501 complete; PN 212-2308-001 sensor/cable only) Removal

32.1 Remove Faceplate per step 31.

32.2 Remove four 1.5 mm hex screws (PN 827-001) securing cover to NIFS sensor. Remove cover.

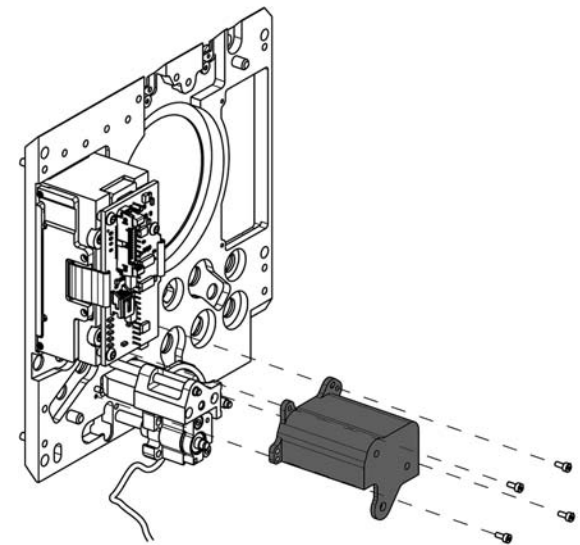


Figure 3-52 NIFS Cover

32.3 Remove three spacer rods shown in Figure 3-53.

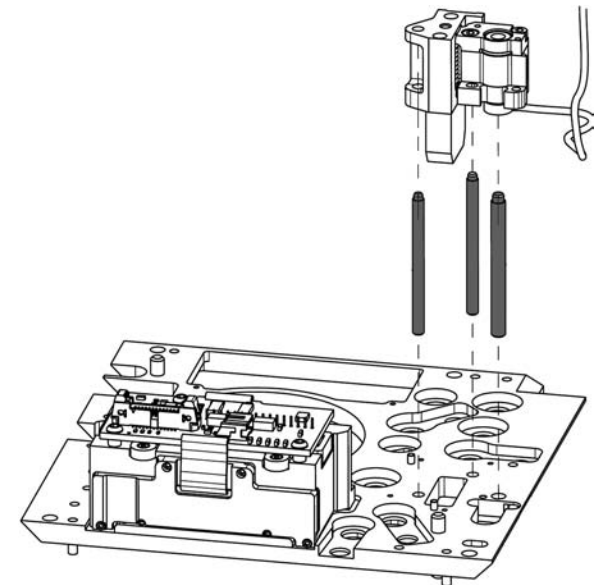


Figure 3-53 NIFS Spacers

- 32.4 Remove two 1.5 mm hex screws (PN 807-139) securing cable retainer to NIFS cylinder linkage body.

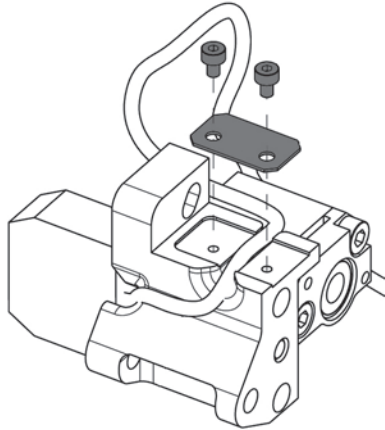


Figure 3-54 NIFS Cable Retainer

- 32.5 Remove two 2 mm hex screws (PN 807-148) securing NIFS sensor to linkage body.

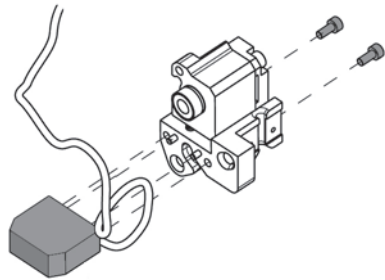


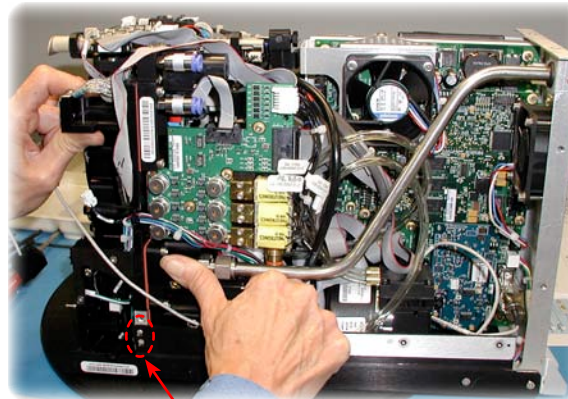
Figure 3-55 Screws Securing NIFS Sensor to Linkage Body

- 32.6 Remove one 2mm hex screw (PN 827-012) securing cable retainer to fluidics module.



Figure 3-56 NIFS Cable Retainer

- 32.7 Remove two 2 mm hex screws (PN 829-001) shown in Figure 3-57. With these two screws removed, the fluidics module assembly can be separated from the base cover enough to allow enough clearance to remove the NIFS cable.



**Figure 3-57 Two 2 mm Hex Screws
Screws Securing Fluidics Module Assembly to Base Cover**

- 32.8 Carefully separate Fluidics Module Assembly from base cover to allow removal of NIFS cable.
- 32.9 Using a standard screwdriver, loosen two screws securing the connector A9AP14 to the fluidics controller PCB. Remove connector and NIFS.

33. Infusion Level Sensor Assembly Removal (PN 212-2545-501)

- 33.1 Remove faceplate per step 31.
- 33.2 Remove four 1.5 mm hex screws (PN 827-001) securing Infusion Level Sensor Assembly to faceplate.

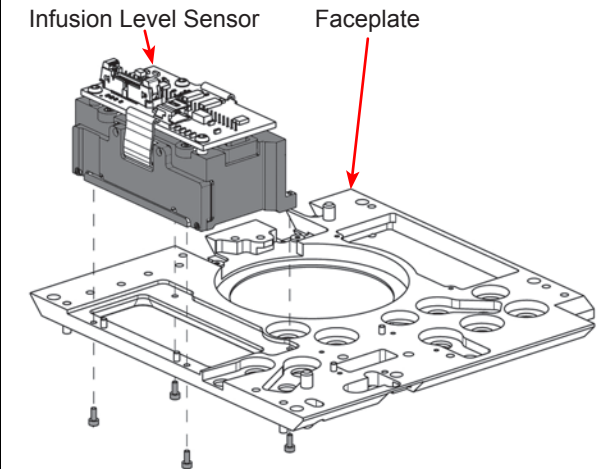


Figure 3-58 Infusion Level Sensor

- 33.3 Lift Infusion Level Sensor Assembly from faceplate.

REPLACEMENT: Clean glass surfaces with isopropyl alcohol and lintless cloth or wipe.

34. Suction Level Sensor Assembly Removal (PN 212-3055-501)

- 34.1 Remove faceplate per step 31.
- 34.2 Remove two 1.5 mm hex screws (PN 827-001) securing Suction Level Sensor Assembly to faceplate.

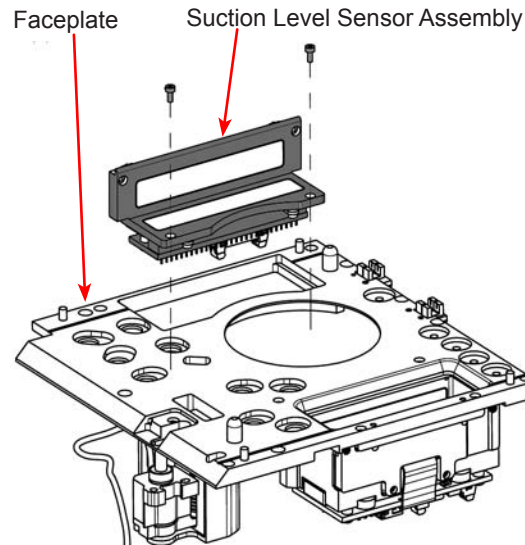


Figure 3-59 Suction Level Sensor

- 34.3 Lift Suction Level Sensor Assembly from faceplate.

REPLACEMENT: Clean glass surfaces with isopropyl alcohol and lintless cloth or wipe.

35. Cassette ID PCB Removal (PN 212-1530-501)

- 35.1 Remove faceplate per step 31.
- 35.2 Remove two 1.5 mm hex screws (PN 827-001) securing PCB to faceplate.

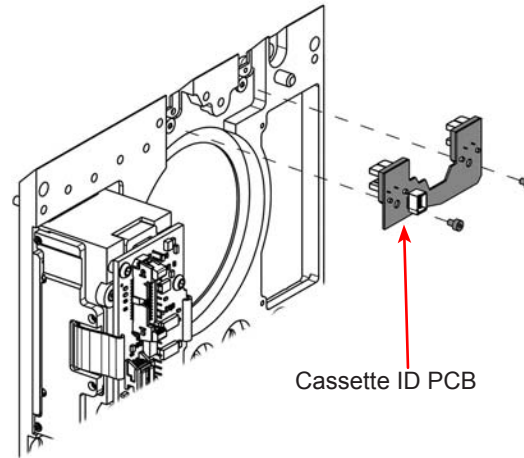


Figure 3-60 Cassette ID PCB

- 35.3 Remove Cassette ID PCB from faceplate.

36. Optical Position Sensors Removal (PN 212-2284-001)

- 36.1 Remove faceplate per step 31.
- 36.2 Remove two 2 mm hex screws (PN 829-001) securing cable retainer to module as shown in Figure 3-61.

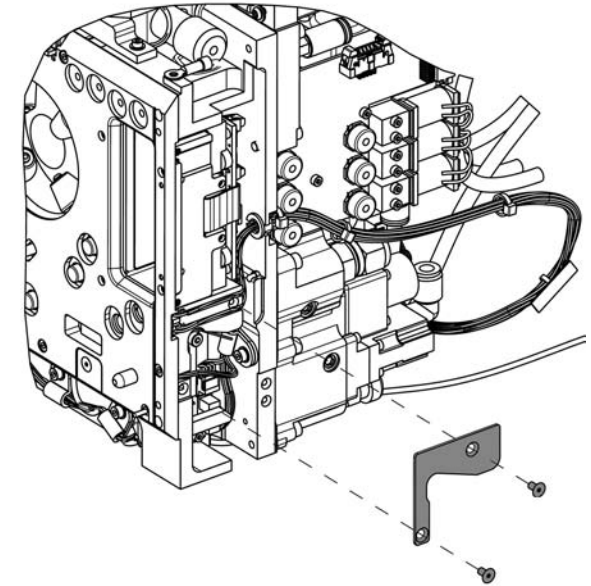


Figure 3-61 Optical Position Sensor Cable Retainer

- 36.3 For each sensor, remove one 2 mm hex screw (PN 829-001) and two retainers (PN 212-2643-001). Pull each sensor from its location (see Figure 3-62).

REPLACEMENT: Ensure that sensor wires are routed properly in channel so they are not pinched when faceplate is attached.

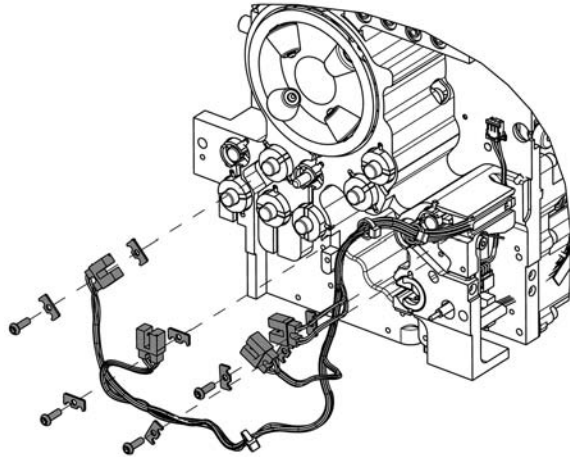


Figure 3-62 Optical Position Sensors

- 36.4 Remove one 4 mm hex screw (PN 807-026) and washer securing back panel to latch mechanism actuator bracket.

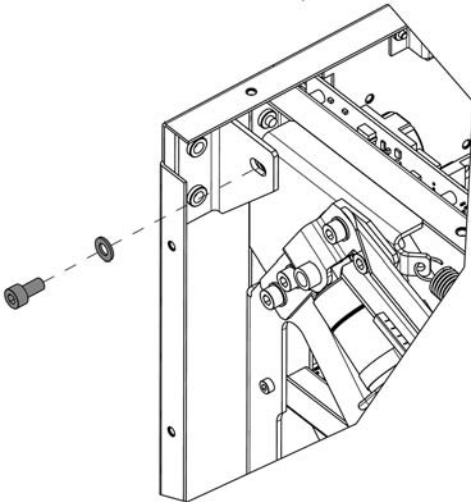


Figure 3-63 Screw Securing Latch Mechanism Actuator Bracket to Back Panel

- 36.5 Remove eight 2 mm hex screws (two on one side, three on the other, three on bottom) securing bottom cover to fluidics module as shown in Figure 3-64.

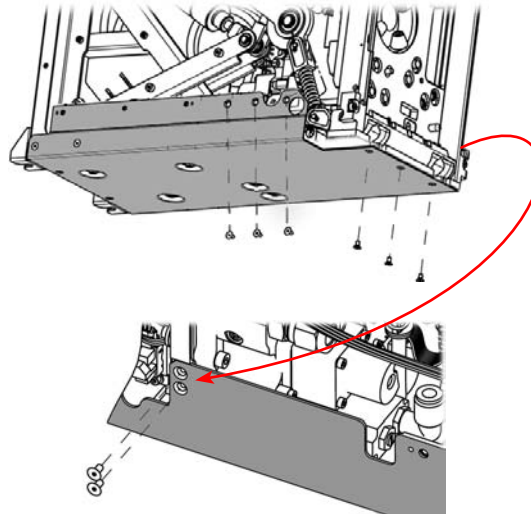


Figure 3-64 Screws Securing Bottom Cover to Fluidics Module

- 36.6 Remove two 2 mm hex screws securing the pneumatic inlet tube bracket (see Figure 3-65; shown without inlet tube).

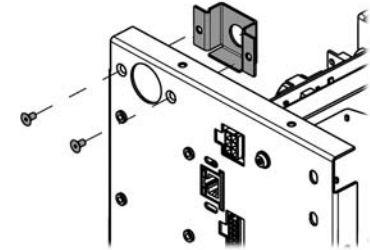


Figure 3-65 Pneumatic Inlet Tube Bracket

The front and back portions of the module can now be partially separated to gain access to the sensor cable connector.

- 36.7 Carefully separate the module as necessary to gain access to the sensor cable connector.
- 36.8 Disconnect A9AP5 from fluidics controller PCB.
- 36.9 Carefully route cable out of module.

37. Fluidics Cylinder Removal (See Figure 3-66 for cylinder location and part number)

NOTE: The most commonly replaced cylinders are included in Cylinder Replacement Kit - PN 212-3362-001. Use of the kit is preferred over ordering of individual cylinders.

- 37.1 Remove faceplate per step 31.
- 37.2 Remove Optical Position Sensor associated with cylinder to be removed (if cylinder has a sensor) per step 3-36.
- 37.3 Grasp cylinder plunger with a pliers and pull to remove cylinder from Fluidics module (see Figure 3-67).

REPLACEMENT:

NOTE: Do not re-use cylinders. Replace cylinders with new cylinders from replacement kit - PN 212-3362-001.

- 37.4 Ensure O-rings are properly placed on new cylinder. If needed, apply Dow Corning** High Vacuum Grease (Dow Corning Part Number - 1597418) to O-rings prior to insertion into Fluidics module.
- 37.5 Insert cylinder into Fluidics module ensuring the alignment keys are aligned with slots in module, and slot for optical sensor is aligned with location where optical sensor is placed (if present).

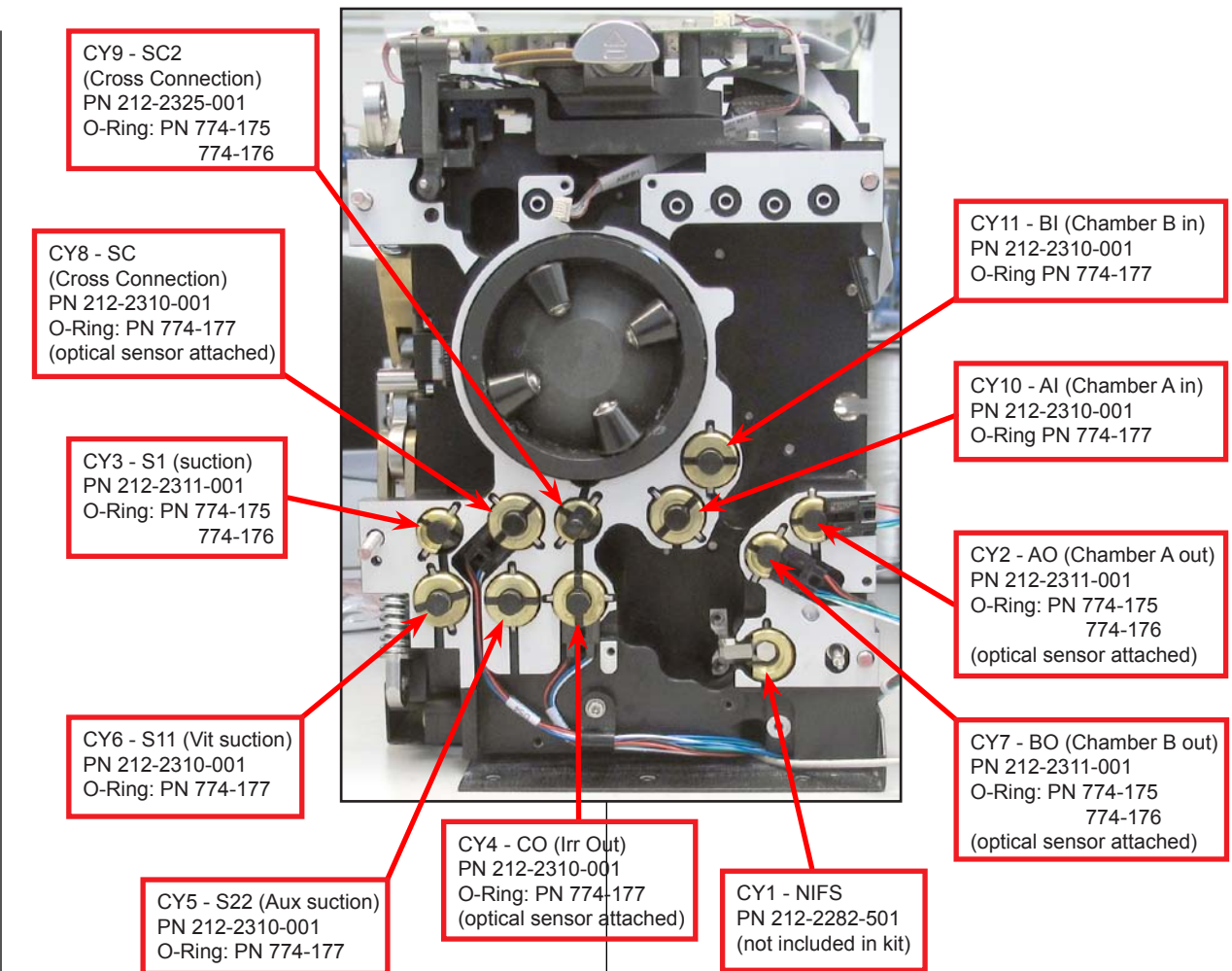


Figure 3-66 Fluidics Module - Cylinder Location Diagram

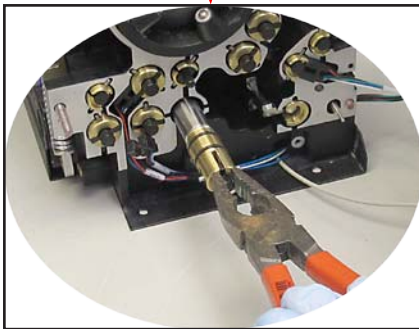
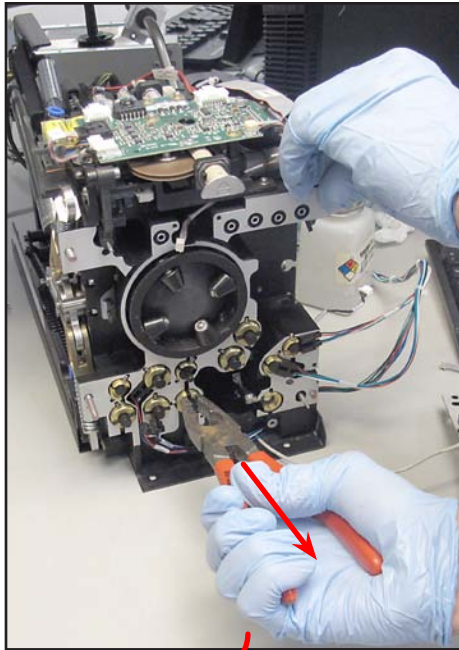


Figure 3-67 Fluidics Cylinder Removal

38. Fluidics Controller PCB Bracket Assembly Removal

- 38.1 Remove twelve 2 mm hex screws (PN 829-001) and one 2.5 mm hex screw (PN 809-006) and washer securing top cover to module chassis (see Figure 3-44). Lift cover from module.
- 38.2 Remove six 2.5 mm hex screws (two on bottom, two on each side) securing rear panel to bottom cover.
- 38.3 Remove two 2 mm hex screws securing pneumatic connector to rear panel (see Figure 3-65).
- 38.4 Disconnect cables from fluidics controller PCB connectors A9AJ1 - A9AJ8 and A9AJ12 - A9AJ14.
- 38.5 Remove four 2.5 mm hex screws and washers (two on rear panel, two on bottom) securing fluidics controller bracket to bottom cover and rear panel (see Figure 3-68).

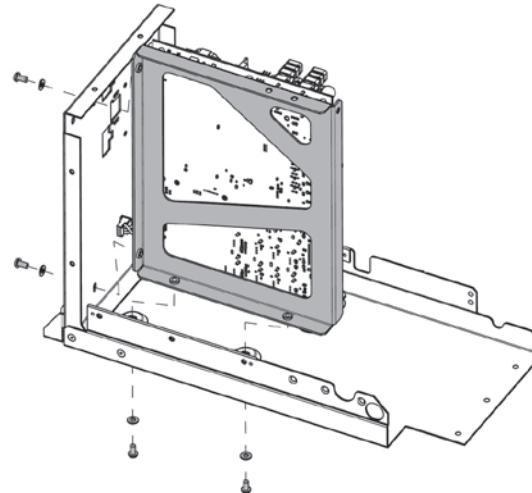


Figure 3-68 Fluidics Controller PCB/Bracket Assembly

- 38.6 Adjust position of bottom cover/rear panel assembly as necessary to remove fluidic controller bracket assembly from module.

39. Fluidics Controller PCB Removal

- 39.1 Remove Fluidics Controller Bracket Assembly per step 38.
- 39.2 Remove twelve 2.5 mm hex screws (807-001) securing fluidics controller PCB to bracket. Remove PCB.

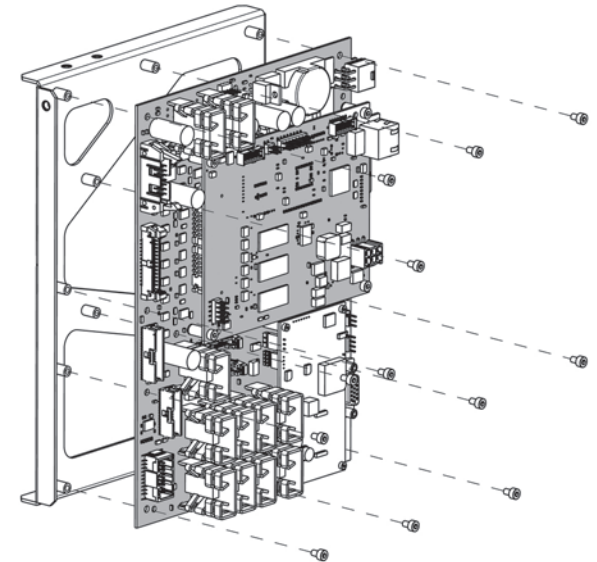


Figure 3-69 Screws Securing Fluidics Controller PCB to Bracket

- 39.3 Remove four 1.5 mm hex screws (807-142) securing Flow Sensor PCB to Fluidics Controller PCB as shown in Figure 3-70. Remove Flow Sensor PCB.

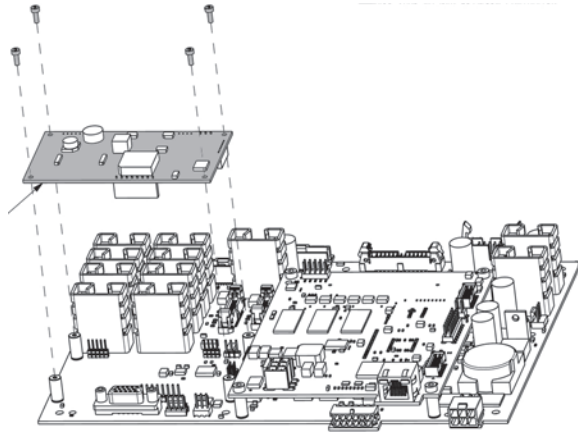


Figure 3-70 Screws Securing Flow Sensor PCB to Fluidics Controller PCB

40. Drain Pump Removal

- 40.1 Remove fluidics module from system per step 30.
- 40.2 Remove Fluidics Controller PCB Bracket assembly per step 38.
- 40.3 Position fluidics module so that faceplate is facedown on table as shown in Figure 3-45.
- 40.4 Remove cassette eject arm/cable assembly.
- 40.5 Disconnect spring from cassette eject arm.
- 40.6 Remove 3 mm hex screw, two washers, spacer, and 7 mm nut securing eject arm to linkage arm (see Figure 3-71). Leave cable attached to eject arm but be careful that cable does not move out of pulley under Fluidics Suction PCB.

REPLACEMENT: Use hole closest to rear of module. Exercise eject mechanism to ensure it does not touch cable. Position tie wrap as necessary to ensure clear movement of eject arm.

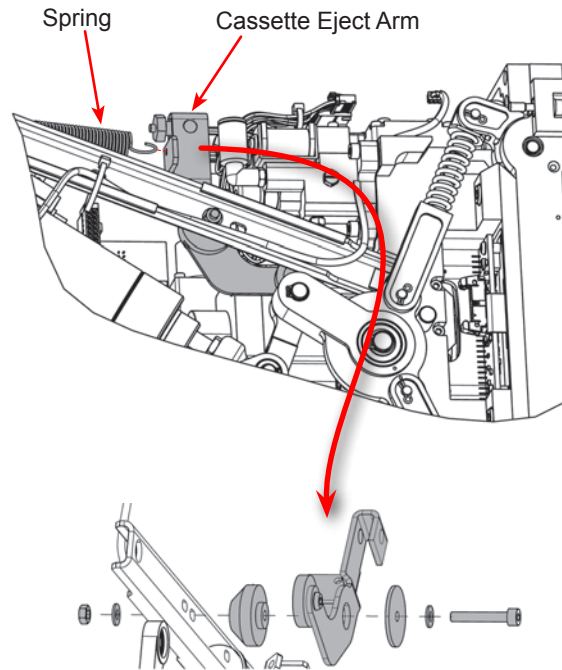


Figure 3-71 Cassette Eject Arm and Spring

- 40.7 Cut cable tie securing W93 to pump assembly.

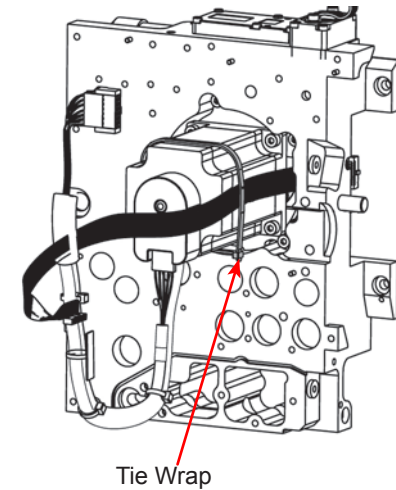


Figure 3-72 Tie Wrap Location on Drain Pump

- 40.8 Remove four 3 mm hex screws (PN 807-015) securing pump to primary manifold. Carefully pull pump assembly from module.

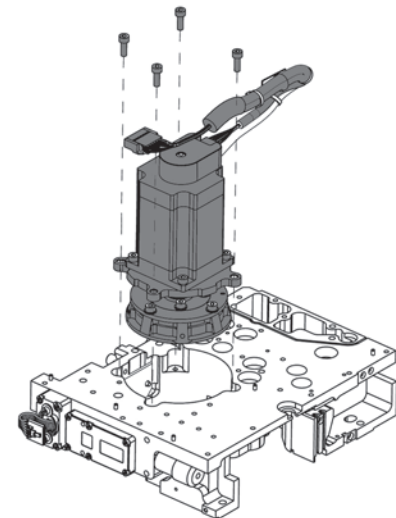


Figure 3-73 Drain Pump (shown without module for clarity)

41. Infusion PCB Removal

- 41.1 Remove Fluidics Module from console per step 30.
- 41.2 Remove twelve 2 mm hex screws (PN 829-001) and one 2.5 mm hex screw (PN 809-006) and washer securing top cover to module chassis. Lift cover from module.
- 41.3 Disconnect connectors from J1, J2, and J3 on Infusion PCB.
- 41.4 Push cable retainer toward front of module to allow repositioning of cable bundle shown in Figure 3-74.

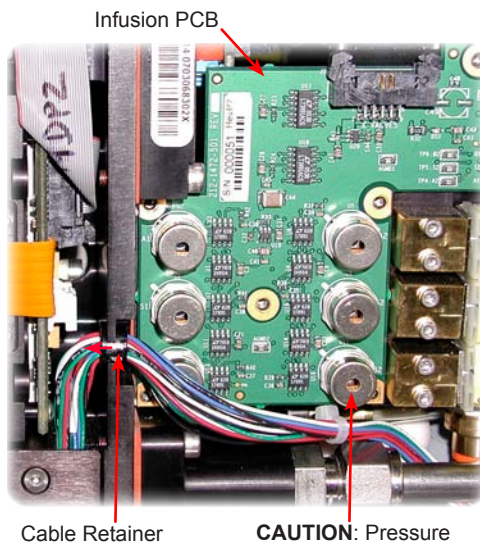


Figure 3-74 Cable Retainer Next to Infusion PCB

CAUTION

Do not place an object, such as a hex wrench, into the holes in the Pressure Sensors (see Figure 3-74). Damage may result to the diaphragm in the sensor.

- 41.5 Remove six 2 mm hex screws securing Infusion PCB to manifold.
- 41.6 Carefully pull Infusion PCB away from manifold. **NOTE: There are six spacers and six o-rings that mount onto each pressure sensor (see Figure 3-75). When removing the Infusion PCB, the spacers may slide off the sensor and the o-rings will remain in the manifold.**

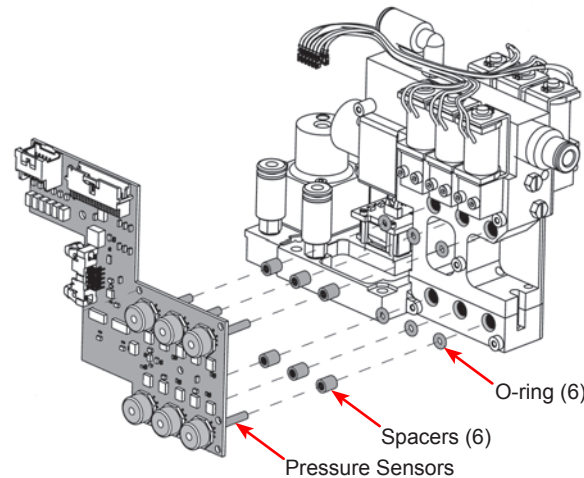


Figure 3-75 Infusion PCB Removal (View rotated 90° CCW)

- 41.7 Remove o-rings from manifold.

REPLACEMENT:

- 41.8 Place spacers and o-rings on pressure sensor posts.
- 41.9 Carefully guide Infusion PCB pressure sensor posts into the manifold. Resistance will be felt when the o-rings touch the manifold. Be sure to apply even pressure over the PCB when pressing the o-rings into the manifold.

- 41.10 Alternately tighten six 2 mm hex screws securing Infusion PCB to manifold and reconnect connectors to J1, J2, and J3.
- 41.11 Place cable and retainer back into position shown in Figure 3-74.

42. Pneumatic Module Removal

- 42.1 Remove front panel per step 16.
- 42.2 Loosen three captive hex screws securing Host Module to tabletop frame (see Figure 3-4). Tilt Host up and towards back of system.
- 42.3 Loosen two captive hex screws at front of Pneumatic Module (see Figure 3-43).
- 42.4 Slide Pneumatic Module forward to gain access to its rear panel connectors.
- 42.5 Disconnect red and blue pneumatic tubes from rear of module.
- 42.6 Disconnect W32 (power), W21 (ethernet), and W26 (slot ID) cables from back of module.
- 42.7 Disconnect pneumatic pressure hose from rear of module (11/16" wrench).
- 42.8 Slide Pneumatic Module out from system.

43. Pneumatic Main PCB Removal

NOTE: The Pneumatic Main PCB contains metric data that should be transferred to the new PCB. Transferring of data is controlled by a proprietary procedure and can only be performed by authorized representatives.

- 43.1 Remove Pneumatic Module from console per step 42.
- 43.2 Remove eight 2 mm hex screws securing module cover to chassis plate as shown in Figure 3-76. Remove module cover.

CAUTION

Do not use a power screwdriver to remove 2 mm hex screws. Stripping of screw may occur.

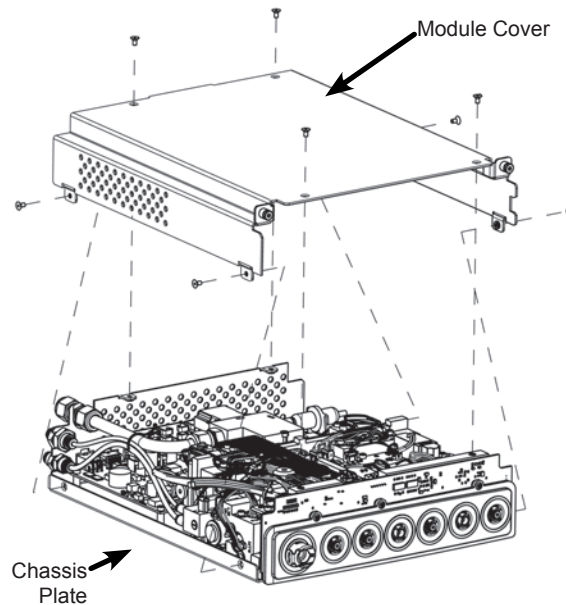


Figure 3-76 Removal of Pneumatic Module Cover

- 43.3 Disconnect blue and red AGF tubing from rear panel connectors.
- 43.4 Disconnect cables W122 (connector A8AP7) and W148 (connector A8AP6) from Pneumatic Main PCB.

CAUTION

Connector pins are fragile and easily bent. To avoid misalignment and bending of pins on connector A8AP7 (W122) during reconnection, disconnect the opposite connector (A8CP1) from Transducer Interface PCB. Then connect A8AP7 to Main PCB prior to installing the manifold as shown in Figure 3-77.

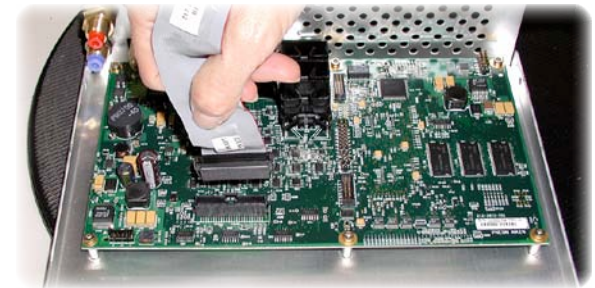


Figure 3-77 Reconnecting W122 A8AP7

- 43.5 Remove five 2 mm hex screws securing manifold/RFID assembly to chassis plate (see Figure 3-78). Remove manifold/RFID assembly from plate.

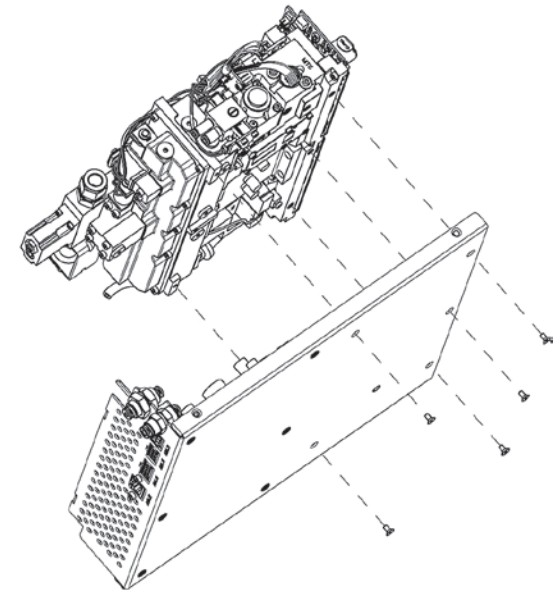


Figure 3-78 Removing Manifold/RFID Assembly from Chassis Plate

- 43.6 Remove six 2.5 mm hex screws securing Pneumatic Main PCB to plate as shown in Figure 3-79.

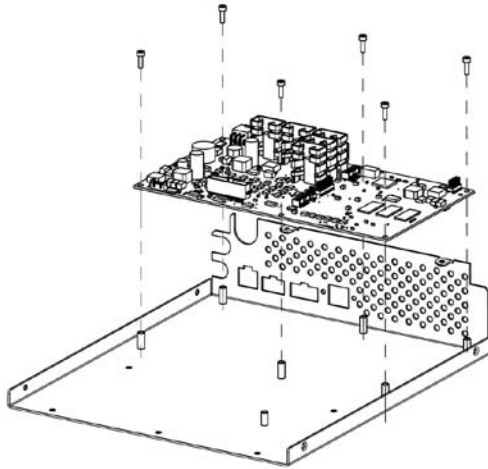


Figure 3-79 Removing Screws Securing Main PCB to Chassis Plate

- 43.7 Carefully pull Pneumatic Main PCB away from ethernet connector bracket (located on chassis plate - see Figure 3-80) and remove from rear panel plate assembly.

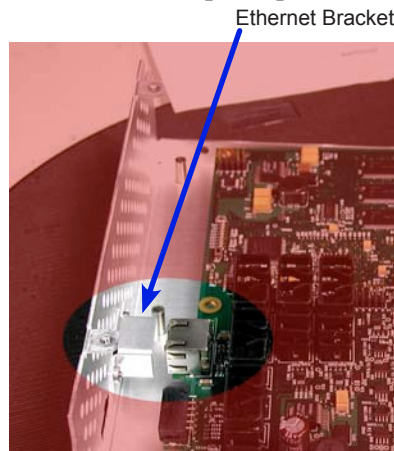


Figure 3-80 Guiding Main PCB Away from Ethernet Bracket

44. Valve Removal

The Fluidics and Pneumatics modules contain valves that may require removal and replacement. The following procedure is generalized for removing any of these valves.

- 44.1 Remove Fluidics or Pneumatics module as required to access valve.
- 44.2 Disconnect valve electrical connector (see Figure 3-81).
- 44.3 Using a small pair of wire cutters carefully cut and remove cable tie from wire harness assembly.
- 44.4 Lift the connector plastic tab up to remove crimped wires from connector (see Figure 3-81). When the plastic tab clears the wire crimp tab, the wire may be pulled out of the connector housing. It is best to use an item with a sharp point to lift the plastic tab. Take care not to damage the plastic tab. The connector housing may be ordered in case it needs replacement.

REPLACEMENT NOTE: After inserting the new wire with crimp, gently pull on it to ensure a secure connection.

- 44.5 Remove two screws securing valve to manifold.

REPLACEMENT NOTE: Use the existing screws to secure the new valve and discard the new screws that came with the new valve. Be careful not to over-tighten (torque specification = 1.8 in-lb).

- 44.6 Remove gasket from manifold (if necessary).

REPLACEMENT NOTE: Orient new gasket as shown in Figure 3-81.

NOTE: Valve removal and replacement requires resetting of metrics and optimization that are controlled by a proprietary procedure and can only be performed by authorized representatives.

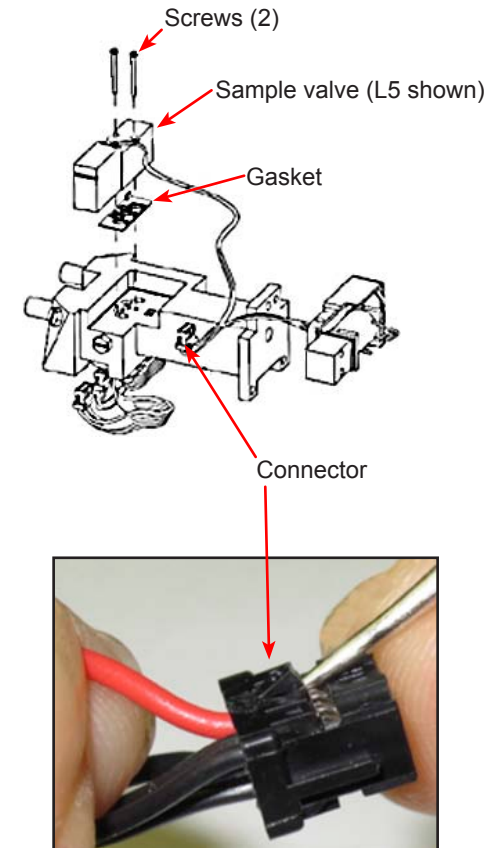


Figure 3-81 Valve Removal

45. AGF Connector Removal

- 45.1 Remove Pneumatic Manifold/RFID Assembly per step 43.
- 45.2 Remove one 2.5 mm hex screw securing AGF retainer plate.

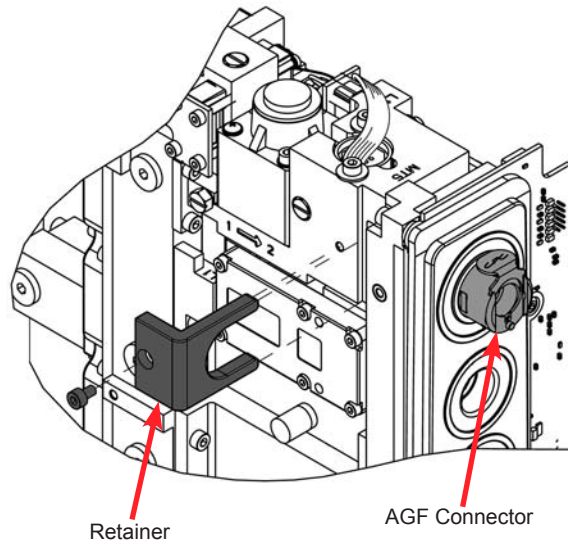


Figure 3-82 Removal of AFG Connector Retainer

- 45.3 Remove AGF connector by twisting and pulling connector from connector panel.

REPLACEMENT: Orient connector so that release tab is towards the top of the connector panel as shown in Figure 3-83.



Figure 3-83 Orientation of AFG Connector

46. RFID PCB Removal

- 46.1 Remove AGF connector per step 45.
- 46.2 Remove three 2.5 mm hex screws securing rear of front cover to manifold assembly (see Figure 3-84).

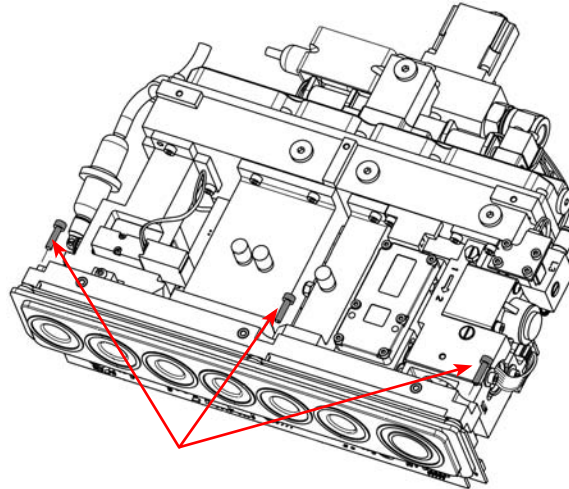


Figure 3-84 Rear Screws Securing Front Cover to Manifold Assembly

- 46.3 Remove three 2 mm hex screws securing module front cover to manifold assy (see Figure 3-85). Remove module front cover.

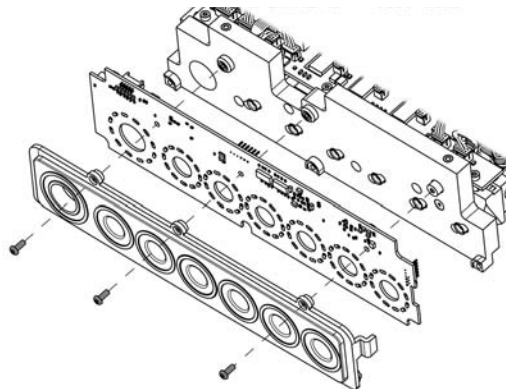


Figure 3-85 Front Screws Securing Front Cover to Manifold Assembly

- 46.4 Disconnect W148 A8DP1 from RFID PCB.
- 46.5 Remove RFID PCB by pulling past each connector o-ring (one at a time).

47. X Valve L3 Replacement

- 47.1 Remove Pneumatic Manifold/RFID Assembly per step 43.
- 47.2 Disconnect W126_1 A8EP1
- 47.3 Remove four 1.5 mm hex screws securing valve to manifold assembly (see Figure 3-86).

REPLACEMENT: Alternate tightening screws. Screws should be tight enough to ensure a good seal. Do not over-tighten.

- 47.4 Carefully lift PCB/valve assembly from manifold. Gasket should remain in place on the manifold and may be reused if in good condition.

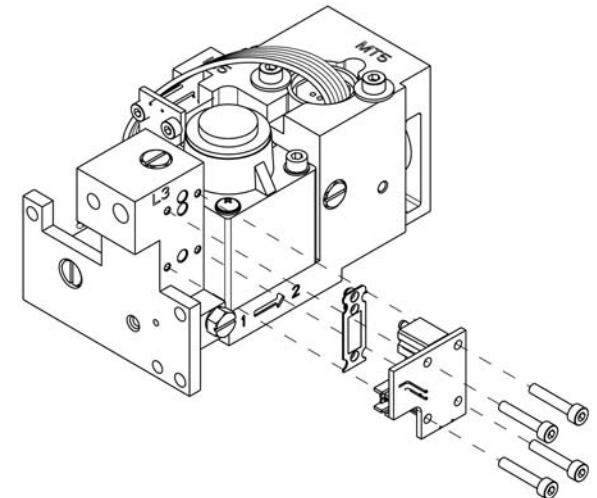


Figure 3-86 X Valve L3 Replacement

48. U/S-Diathermy Module Removal

- 48.1 Remove front panel per step 16.
- 48.2 Loosen three captive hex screws securing Host Module to tabletop frame (see Figure 3-4). Tilt Host up and towards back of system.
- 48.3 Loosen four captive hex screws on front of U/S Diathermy Module (see Figure 3-43).
- 48.4 Slide U/S Diathermy Module forward to gain access to its rear panel connectors.
- 48.5 Disconnect W30 (power), W20 (ethernet), and W26 (slot ID) cables from back of module.
- 48.6 Slide U/S Diathermy Module out from system.

49. U/S-Diathermy PCB Removal

- 49.1 Remove U/S module per step 48.
- 49.2 Remove six 2 mm hex screws securing U/S module cover. Remove cover from module.
- 49.3 Disconnect the following connectors from U/S-Diathermy PCB: J12-J16, J19, J20.
- 49.4 Remove six 2.5 mm hex screws and lockwashers securing U/S-Diathermy PCB to module chassis. Remove module from chassis.

50. U/S Connector Removal

- 50.1 Remove U/S module per step 48.
- 50.2 Disconnect the following connectors from U/S-Diathermy PCB: J12-J16, J19, J20, J24, J25.
- 50.3 Remove four 2.5 mm hex screws securing front connector panel to module chassis. Feed connectors and cables through gasket, and remove connector panel from module.
- 50.4 Remove nut and washer securing connector to panel (see Figure 3-87). Remove connector and o-ring from panel.

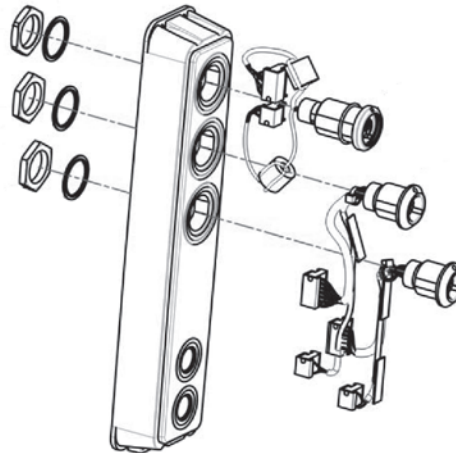


Figure 3-87 U/S Connector Removal

51. Air Distribution Assembly Removal

- 51.1 Remove Fluidics (step 30), Pneumatics (step 42), and U/S (step 48) Modules.
- 51.2 Remove two 3 mm hex screws securing cable cover to rear panel (see Figure 3-88).



Figure 3-88 Cable Cover Removal

- 51.3 Remove two 2.5 screws under cable cover securing rear panel to chassis.
- 51.4 Tilt Host shelf to access two 2.5 mm hex screws securing rear panel to chassis. Remove screws and rear panel.
- 51.5 Remove four 2.5 mm hex screws securing Air Distribution Assembly to chassis (see Figure 3-89). **NOTE: Access to screws is limited - use a ball-end hex wrench to remove. Use care not to cross-thread screws during replacement.**

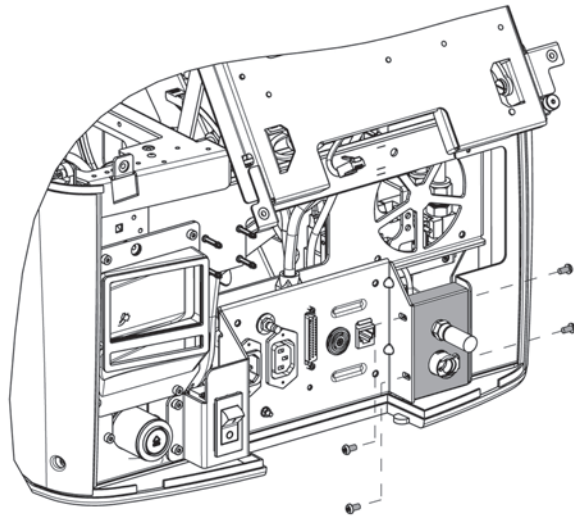


Figure 3-89 Screws Securing Air Distribution Assembly to Rear of Chassis

- 51.6 Remove two 2.5 mm hex screws securing Water Trap to Air Distribution Assembly. Pull Water Trap Assembly straight up to remove from Air Distribution Assembly.

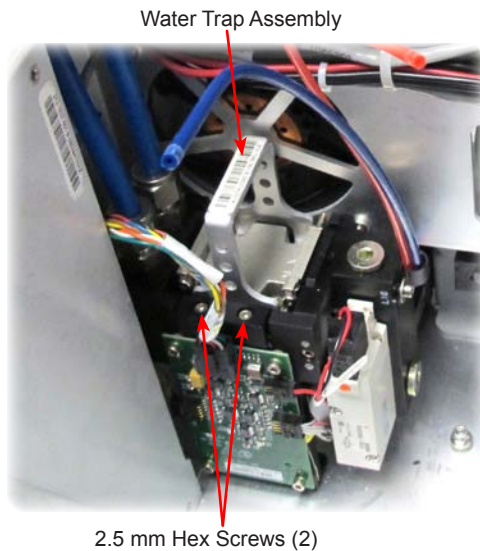


Figure 3-90 Water Trap Removal

8065751153

- 51.7 Loosen two captive screws securing Air Distribution Assembly to base of console.

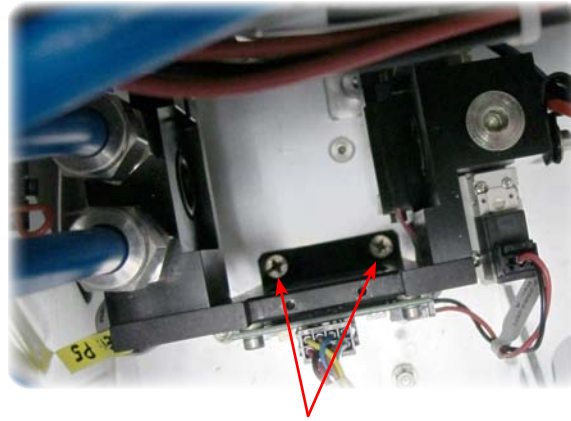


Figure 3-91 Captive Screws Securing Air Distribution Assembly to Base of Console (top view)

- 51.8 Carefully remove Air Distribution Assembly from console. Push assembly as far back as possible then angle it up and out of console.

COMPRESSION FITTING INSTRUCTIONS:

The pneumatic tubing used on the Air Distribution Module uses compression fittings that require a specific installation sequence. If this sequence is not followed, the tubing can come off, make a loud noise, and prevent the system from operating correctly.

The Air Distribution Module comes with tubing that leads to the Fluidics and Pneumatic Modules (see Figure 3-92). The tube to the Fluidics Module has the fittings installed; however, the tubing for

the Pneumatic Module does not. Since the existing tubing in the system has the compression fittings already installed, it is best to transfer the existing tubing to the replacement assembly. If this is not possible, be sure to follow the Compression Fitting installation instructions detailed in the following steps.

- 51.9 Ensure all components are present in compression fitting as shown in Figure 3-92, Diagram A.
- 51.10 Ensure direction of all components match that shown in Figure 3-92, Diagram A.
- 51.11 Ensure tube is pushed firmly into bottom of fitting.
- 51.12 Finger tighten nut.
- 51.13 Tighten nut 1 1/4 turns.

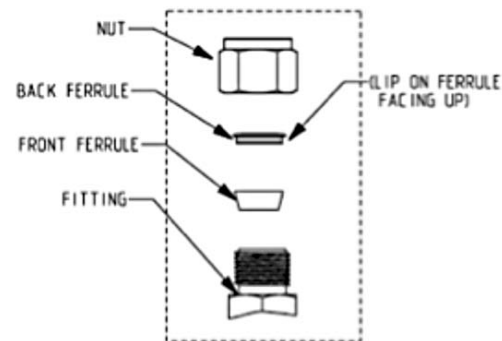
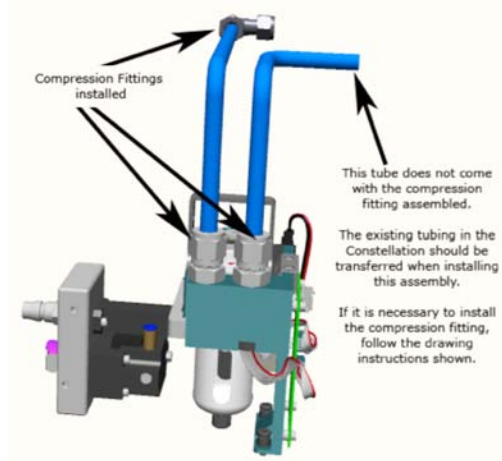


DIAGRAM "A"
COMPRESSION FITTING

Figure 3-92 Air Distribution Module
Compression Fittings

BASE DISASSEMBLY PROCEDURES

52. Air Filter Removal (see Figure 3-93)

- 52.1 Push air filter faceplate in then release. Faceplate/filter assembly will release from quick release fastener and extend out from system.
- 52.2 Pull faceplate/filter assembly from system.

53. Upper Front Panel Removal

- 53.1 Remove air filter per step 52.
- 53.2 Remove two 3 mm hex screws securing panel to system chassis.
- 53.3 Remove panel from system.

54. Lower Front Panel Removal

- 54.1 Remove upper front panel per step 53.
- 54.2 Carefully pull lower front panel away from system.

REPLACEMENT: Carefully pull edges panel out while pushing it into place.

55. Air Filter Duct Removal

- 55.1 Remove upper front panel per step 53.
- 55.2 Loosen two captive standard screws securing duct to chassis. Assembly will drop down for removal.

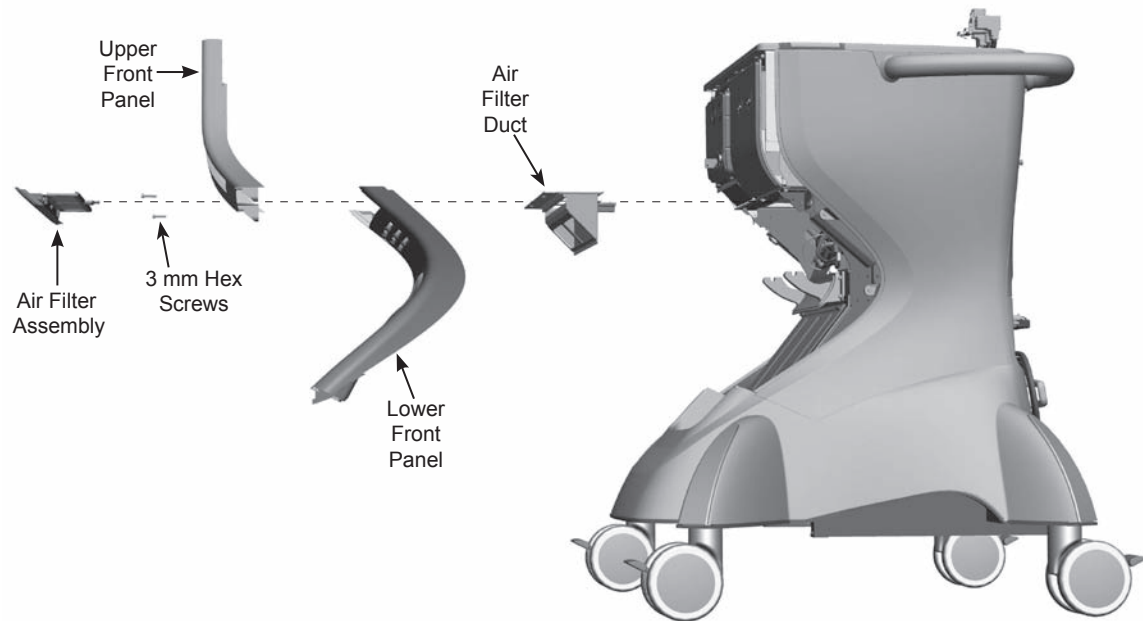


Figure 3-93 Base Front Panel(s) Removal

56. Laser Module Removal

- 56.1 Remove upper front panel per step 53.
- 56.2 Loosen four 3 mm captive screws securing laser module to system chassis (see Figure 3-94).
- 56.3 Pull laser module from system.
- 56.4 Remove four 2.5 mm hex screws securing plastic panel to front of module (see Figure 3-94). Do not remove panel.

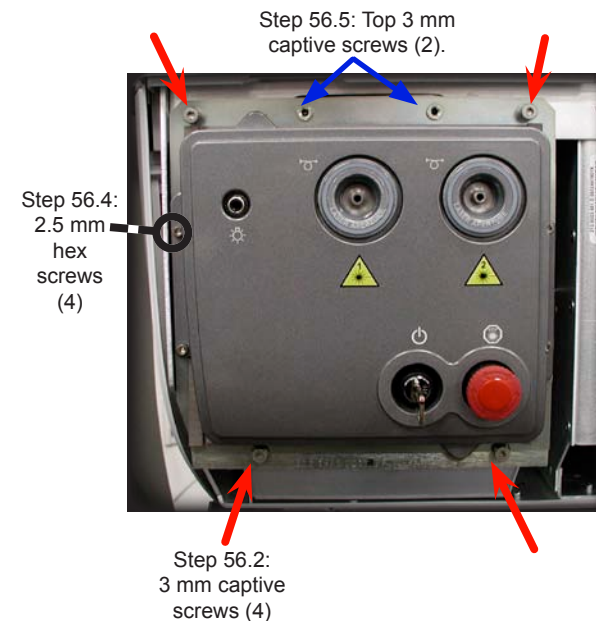


Figure 3-94 Laser Module Removal

- 56.5 Loosen four 3 mm captive hex screws securing laser front panel assembly to laser module. Two of the screws are accessed through the opening in the bottom of the module (see Figure 3-95).

Step 56.5: Bottom 3 mm captive screws (2).

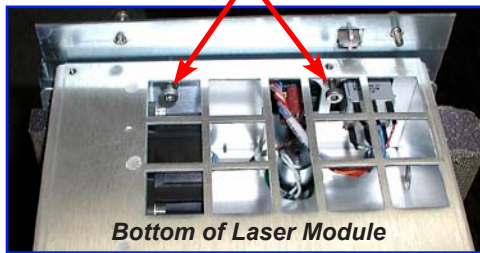


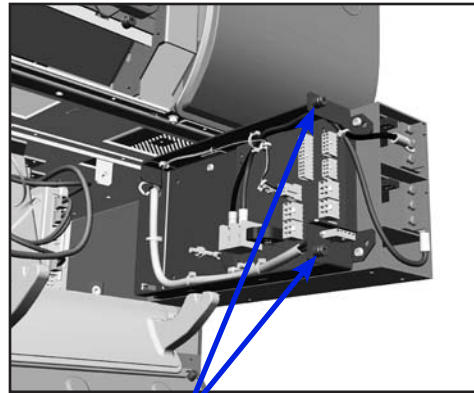
Figure 3-95 Captive Screws on Bottom of Laser Module

- 56.6 Disconnect the following connectors from the laser faceplate:
- Keyswitch connector: twist connector and pull away from faceplate.
 - Emergency Stop connector: At PCB on laser module, press connector release tab and pull from PCB.
 - White LIO power cable: At PCB on laser module, press connector release tab and pull from PCB.
- 56.7 Remove EMI Bracketed from rear of laser module by loosening four 2.5 mm screws securing bracket to module chassis.

NOTE: With the components removed in steps 56.4 - 56.7, the module has been reduced down to the Core Module. For further disassembly, refer to the *PurePoint Laser Service Manual.**

57. 650 W Power Supply Removal

- 57.1 Remove lower front panel per step 54.
- 57.2 Loosen two 3 mm captive screws securing power supply to chassis.



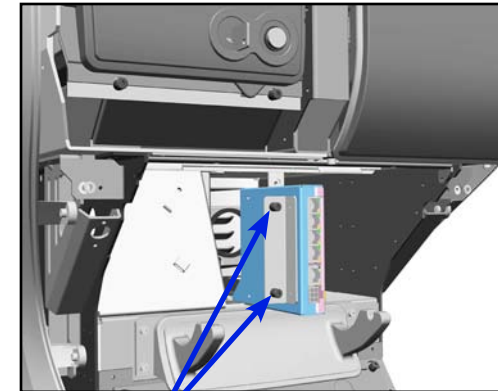
3 mm captive screws securing power supply to chassis

Figure 3-96 650 W Power Supply Removal

- 57.3 Disconnect W04, W3, W23 and W09 cables from power supply.
- 57.4 Pull power supply partially out of chassis to disconnect W5, W10, and W3 (data).
- 57.5 Pull power supply completely out of system.

58. Base Switch Removal

- 58.1 Remove 650 W power supply per step 57.
- 58.2 Starting from bottom of base switch, remove connectors W10 (power), W02, two connectors open, W11, and W7 (top).
- 58.3 Loosen two 3 mm captive hex screws securing base switch to frame. Slide base switch out of system.

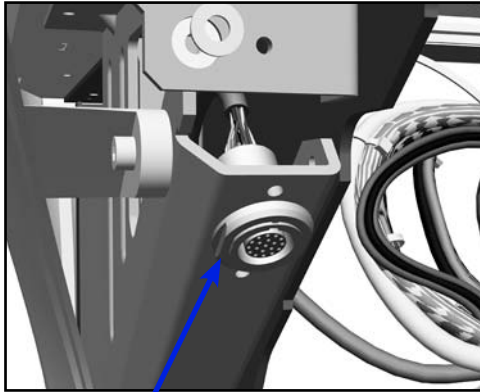


3 mm captive screws securing base switch to frame

Figure 3-97 Base Switch Removal

59. Footswitch Connector Removal

- 59.1 Remove lower front panel per step 52.
- 59.2 Loosen nut securing footswitch connector (see Figure 3-98).



Nut securing footswitch connector to chassis

Figure 3-98 Footswitch Connector Removal

- 59.3 Remove panels shown in Figure 3-99 in the following order:
 - 1) Table Top Connector panel (two 3 mm hex screws)
 - 2) Drawer
 - 3) Illuminator panel (two 3 mm hex screws)
 - 4) Laser panel (two 3 mm hex screws)
 - 5) Rear panel (two 3 mm hex screws).
- 59.4 Loosen tabletop from base using caster wrench (PN 210-2428-001).
- 59.5 Lift back of tabletop up and place a screwdriver under it to hold it in place.
- 59.6 Disconnect footswitch cable from tabletop.

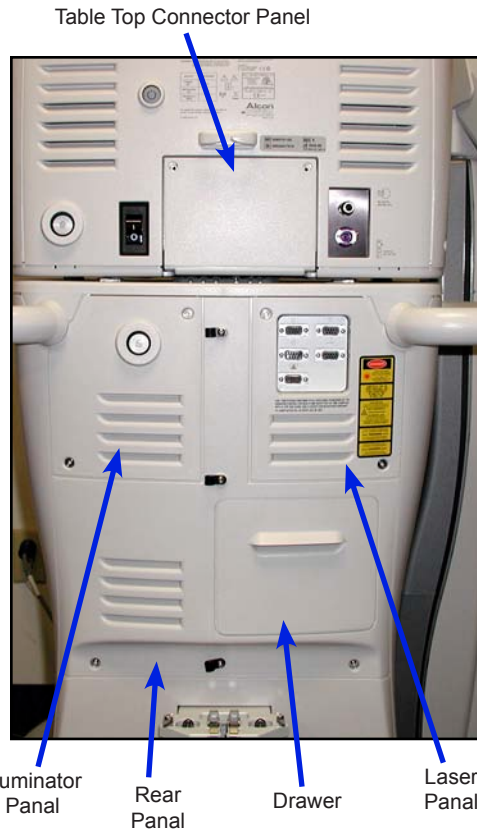


Figure 3-99 Panel Removal for Access to Footswitch Cable

- 59.7 Move cable grommet as necessary to push footswitch cable through top of base (see Figure 3-99).
- 59.8 Remove cable ties and route cable as necessary to remove from system.
Replacement: Make note of old footswitch cable routing path in order to properly route new cable.

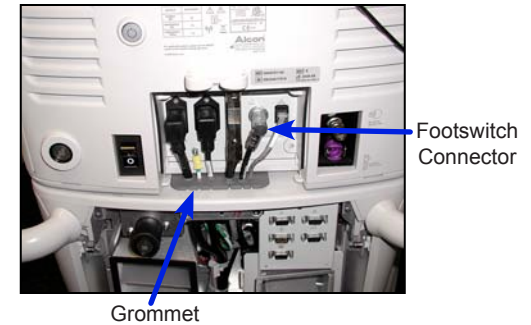


Figure 3-100 Footswitch Connector and Grommet Location

60. Auxillary Illuminator Module Removal

- 60.1 Press eject button on base rear panel to release Illuminator module. Pull module out so that it is fully extended on the guide rails.
- 60.2 On guide rails located on each side of the module, press release tabs (one up, one down) to release module from rails (see Figure 3-19).
- 60.3 Slide Illuminator Module out from system.

NOTE: Refer to Section Four for lamp replacement procedures.

61. Auxillary Illuminator Module Removal

- 61.1 Remove six 2 mm screws securing top cover to chassis. Remove cover.

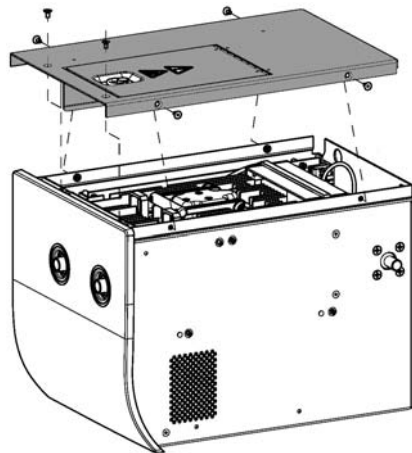


Figure 3-101 Auxillary Illuminator Top Cover

- 61.2 Remove two 2 mm screws from sides, and two 2.5 mm screws from top of chassis. Remove front panel.

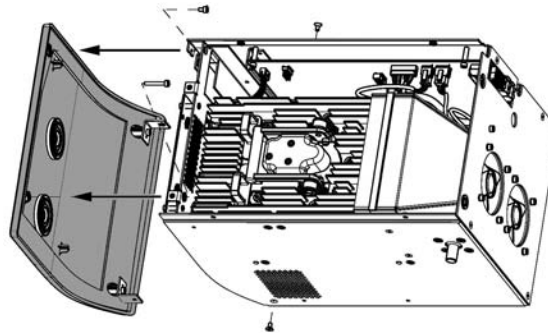


Figure 3-102 Auxillary Illuminator Front Panel

- 61.3 Remove five screws (2 mm and 2.5 mm) securing rear panel to chassis. Pull panel away slightly to access and disconnect two fan cables. Remove rear panel.

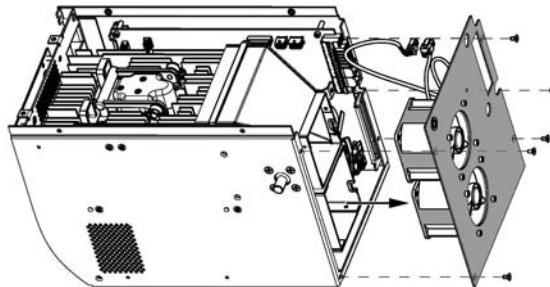


Figure 3-103 Auxillary Illuminator Rear Panel

- 61.4 Remove two 2 mm screws from side of chassis, and pull the vent duct out and away.

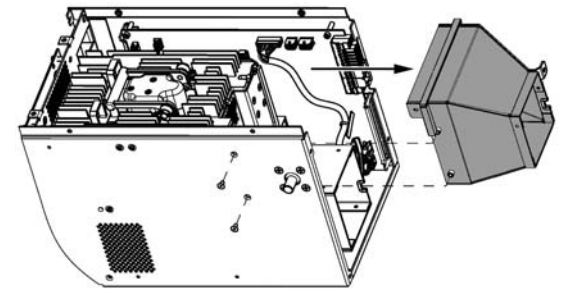


Figure 3-104 Auxillary Illuminator Vent Duct

- 61.5 Remove three 2.5 mm screws securing lower duct. Remove lower duct.

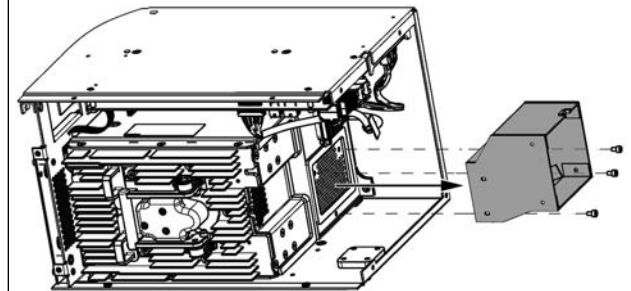


Figure 3-105 Auxillary Illuminator Lower Duct

- 61.6 Remove four 2.5 mm screws securing two cable connectors to back of power supply. Disconnect both ends of cables and remove from chassis.

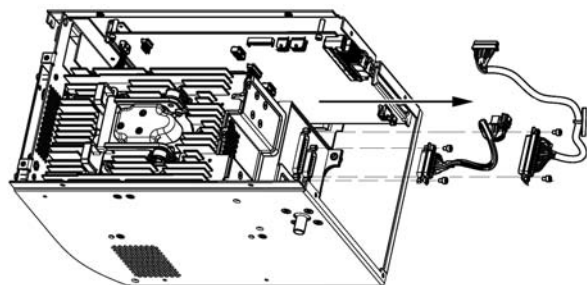


Figure 3-106 Auxiliary Illuminator Power Supply Cable Connectors

61.7 Remove four 2.5 mm screws securing RFID PCB to front of chassis. Disconnect cable from Illuminator Control PCB, and remove RFID PCB.

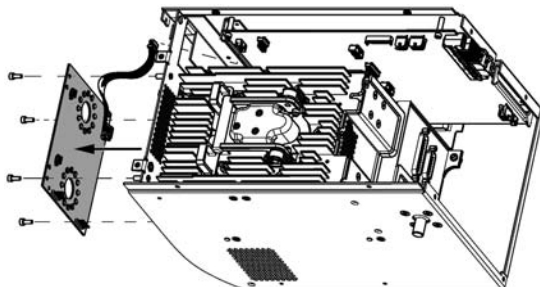


Figure 3-107 Auxiliary Illuminator RFID PCB

NOTE: The Controller PCB contains metric data that should be transferred to the new PCB. Transferring of data is controlled by a proprietary procedure and can only be performed by authorized representatives.

61.8 Remove three 3 mm screws securing Illuminator Control PCB to chassis. Remove Illuminator Control PCB.

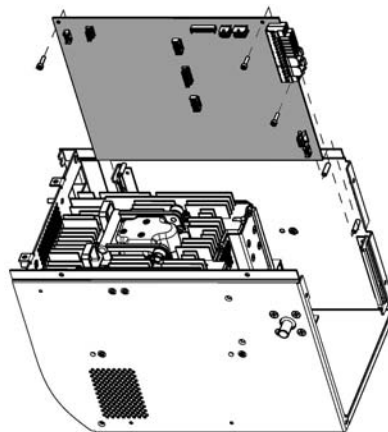


Figure 3-108 Auxiliary Illuminator Control PCB

61.9 Remove three 2 mm screws from under chassis, pull chassis frame away and remove.

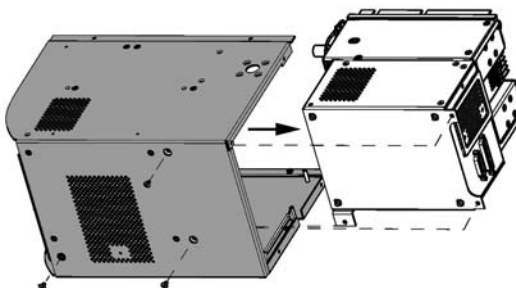


Figure 3-109 Auxiliary Illuminator Chassis Frame

61.10 Remove four screws securing power supply to Optics Module.

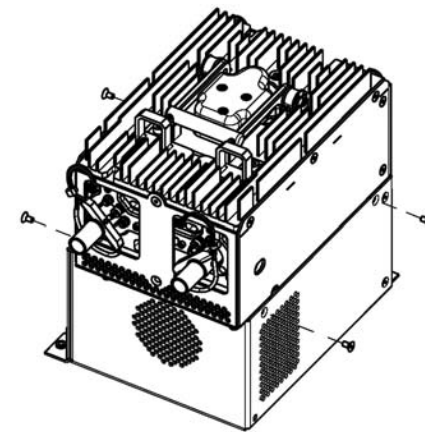


Figure 3-110 Auxiliary Illuminator Optics Module Screws

61.11 Carefully separate power supply from Optics Module (to gain access) and disconnect ribbon cable. Remove one 2.5 mm screw securing high-voltage connector to Optics Module. Remove connector from Optics Module and set block aside in a clean area.

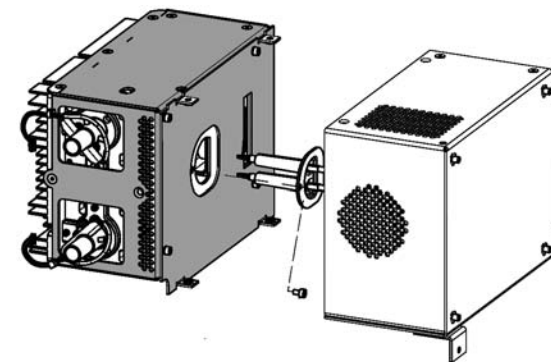


Figure 3-111 Auxiliary Illuminator Optics Module Removal

61.12 Refer to step 23 for disassembly of optics module.

TRAY ARM ASSEMBLY REMOVAL PROCEDURE

62. Tray Assembly Removal

- 62.1 Press Tray Arm release latch and rotate tray to vertical position.



Figure 3-112 Rotating Tray to Vertical Position

- 62.2 Remove three 4 mm hex screws securing cover to latch release mechanism (see Figure 3-113). Remove cover.

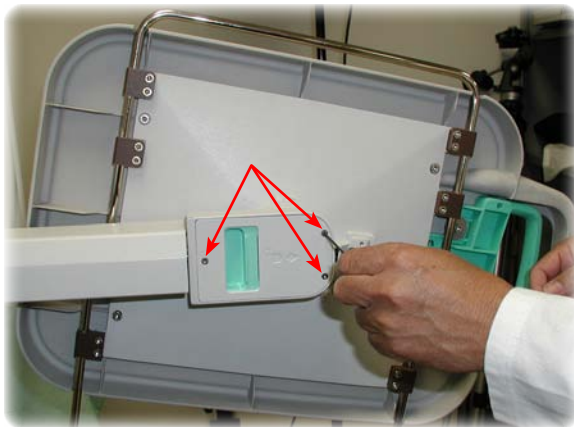


Figure 3-113 Removing Cover from Latch Release Mechanism

- 62.3 Place a piece of adhesive tape over the Release Latch to keep it in place as shown in Figure 3-114.



Figure 3-114 Tape Holding Release Latch in Place

- 62.4 Remove four 4 mm hex screws (see Figure 3-115) inside Latch Release Mechanism and remove tray assembly.

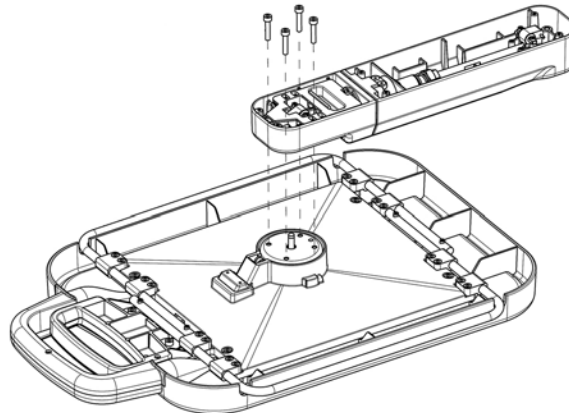


Figure 3-115 Remove Tray Assembly from Latch Release Mechanism

63. Tray Disassembly

- 63.1 Remove Tray Assembly per step 62.
63.2 Remove four 4 mm hex screws from bottom of tray assembly (see Figure 3-116).

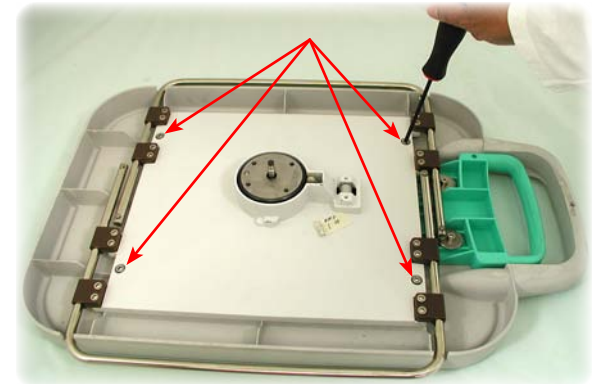


Figure 3-116 Four Screws on Bottom of Tray Assembly

- 63.3 Remove two 4 mm hex screws and washers from Tray Arm Release Handle (see Figure 3-117).

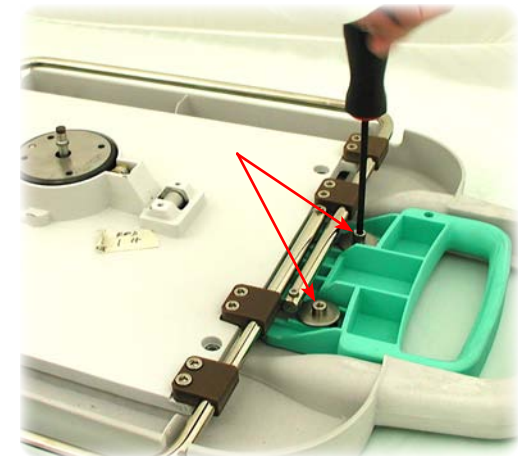


Figure 3-117 Two Screws Securing Release Handle

- 63.4 Carefully turn over tray assembly by holding tray and support to prevent tray arm release handle from falling.



Figure 3-118 Turning Over the Tray Assembly

- 63.5 Lift and remove tray from assembly.

64. Remove Lower Tray Arm

- 64.1 Remove Tray Assembly per step 62.
64.2 Remove bottom cover by removing four 2 mm hex screws shown in Figure 3-119.



Figure 3-119 Screws Securing Lower Tray Arm Cover

- 64.3 While holding onto Lower Tray Arm, remove four 4 mm hex screws securing Lower Arm to Upper Tray Arm Assembly shown in Figure 3-120.

CAUTION

Lower Tray Arm must be supported to prevent it from falling once screw is removed.

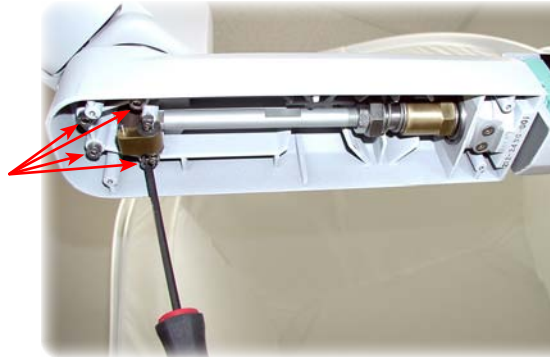


Figure 3-120 Screws Securing Lower Tray Arm to Upper Tray Arm

65. Remove Upper Tray Arm

- 65.1 Remove Tray Assembly per step 62 and Lower Tray Arm per step 64.
65.2 Position Upper Tray Arm so that it is perpendicular to system and both sides of the joint cover are accessible.
65.3 Remove six 2.5 mm hex screws (3 on each side) from Upper Arm Joint Cover. Remove cover (see Figure 3-121).

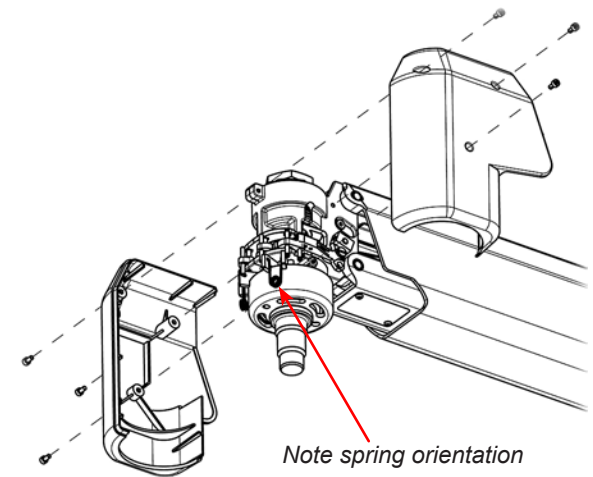


Figure 3-121 Upper Tray Arm Joint Cover

- 65.4 Loosen one 4 mm hex screw (shown in Figure 3-122) from Tray Arm Column and remove Upper Arm Assembly.

Replacement: When reinstalling joint covers, ensure that the spring is in down position.



Figure 3-122 Screw Securing Upper Tray Arm to Tray Arm Column

66. Tray Latch Removal

- 66.1 Press Tray Arm release latch and rotate tray to vertical position.
- 66.2 Remove three 4 mm hex screws securing cover to latch release mechanism (see Figure 3-107). Remove cover.
- 66.3 Carefully pull Tray Latch off so that the springs shown in Figure 3-123 do not fall out.

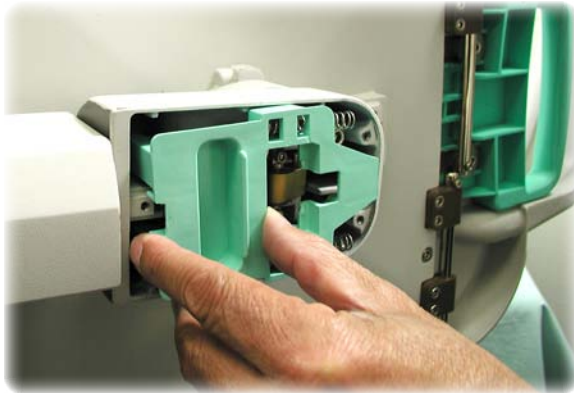


Figure 3-123 Removing the Tray Latch

- 66.4 *Replacement:* Put Tray Latch back into Lower Arm by matching up the Tray Latch with the grooves in the Lower Arm (see Figure 3-124) and maintaining the springs in a straight position.

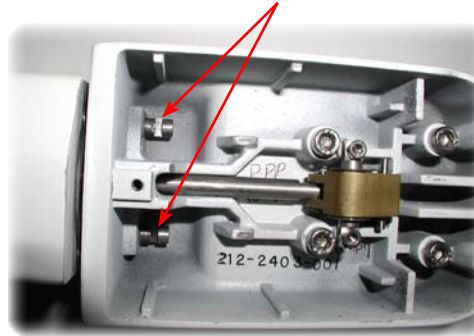


Figure 3-124 Tray Latch Replacement: Grooves in Lower Arm

Tray Arm Common Replacement Parts

Table 3-1 lists Tray Arm common replacement parts. If other parts are needed, replacement of the entire Tray Arm Assembly should be considered. Refer to the Tray Arm Parts Drawings in Section Six for further part number detail.

Table 3-1 Tray Arm Common Replacement parts

Part Number	Description
212-3585-001	Actuator, Brake, Outboard Left
212-3586-001	Actuator, Brake, Inboard Left
212-3587-001	Actuator, Brake, Outboard Right
212-3588-001	Actuator, Brake, Inboard Right
212-1285-001	Locking blades
773-092	Retaining Ring
212-1268-002	Cover, Elbow, Left Molded
212-1269-002	Cover, Shoulder, Left Molded
212-1374-002	Cover, Elbow, Right Molded
212-1375-002	Cover, Shoulder, Right Molded
212-3167-001	Spring Lock
212-1296-001	Actuator pins
212-3447-001	Actuator Link
212-3563-001	Actuator lever

67. Tray Arm Actuator Replacement

Refer to figure 3-125 for component locations

Note: The original actuators and covers have been replaced with ones that are left and right specific. These are not to be mixed with the original.

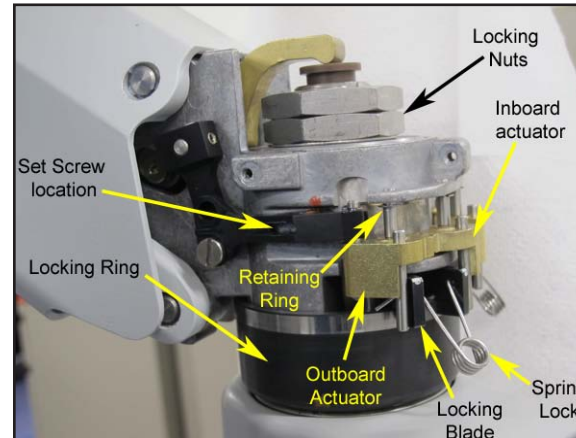


Figure 3-125 Tray Arm Component Location Diagram

67.1 Remove covers as necessary to access tray arm mechanism to be serviced.

67.2 Remove Spring locks - Using needle nose pliers, compress and remove spring locks (Figure 3-126). Set aside for later installation.

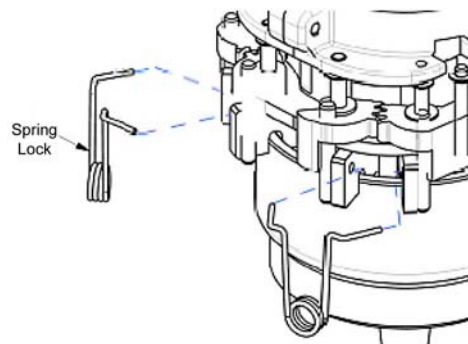


Figure 3-126 Tray Arm - Spring Locks

67.3 Remove retaining ring from pin (s) as shown in Figure 3-127.

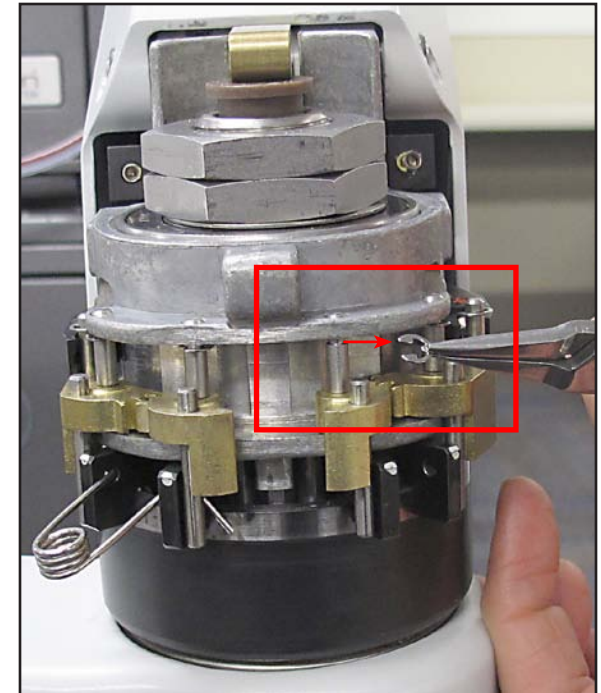


Figure 3-127 Tray Arm - Retaining Ring Removal

- 67.4 Slide pin upward to remove then remove actuator (Figure 3-128).

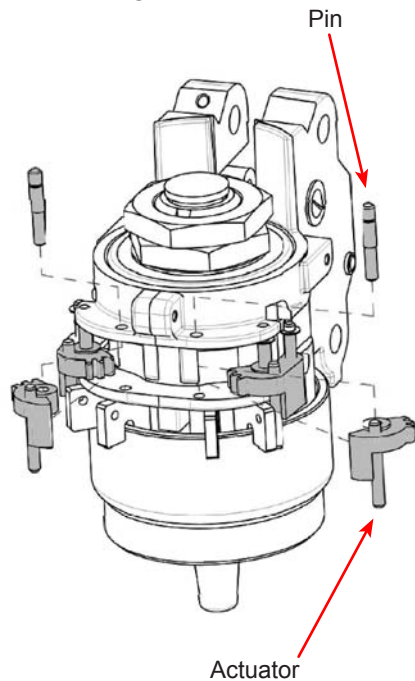
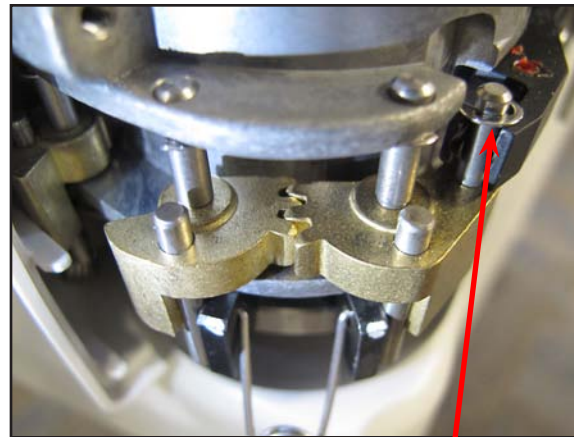


Figure 3-128 Tray Arm - Pins and Actuators

REPLACEMENT:

- 67.5 Install new actuator - Ensuring right/left actuator pairs are properly positioned with proper gear alignment and retaining ring at lever/pin interface is in place, (see Figure 3-129) replace using new clips and actuator pins as necessary.



Retaining ring at
lever/pin interface

Figure 3-129 Tray Arm - Gear Alignment

- 67.6 Using needle nose pliers, install springs previously removed.
- 67.7 Verify full range of motion. **NOTE: It may be necessary to adjust set screw shown in Figure 3-125 (set screw is in recessed area of the actuator lever). Tightening the set screw extends the actuator range of motion.**
- 67.8 Install covers. If replacing original actuators, new covers are necessary to avoid interference.
- 67.9 Verify tray arm has full range of motion.

68. Tray Arm Locking Blade Removal

NOTE: If locking blade replacement is in the shoulder, the tray arm must be removed from the mounting post. The elbow locking blade replacement does not require removal from the mounting post.

- 68.1 Remove Actuators as outlined in step 66.
- 68.2 Refer to Figure 3-125 for component location reference
- 68.3 Loosen the two locking nuts to allow the bottom locking ring to move and create enough space to remove the Locking Blades. **NOTE: It may be necessary to lightly tap on the locking nuts for the locking ring to loosen.**

REPLACEMENT:

- 68.4 Install new locking blades - Align replacement blades with locking ring and between posts. Retighten locking nuts. **NOTE: When locking nuts are tight, there should not be a gap between the bottom of the locking ring and the tray arm.**
- 68.5 Install new actuators and pins - Ensuring right/left actuator pairs are properly positioned as shown install using new clips and actuator pins. Ensure gear alignment as shown in Figure 3-129. **NOTE: For actuator installation, use Nye** Lubricant (Nye part number - 8981).**
- 68.6 Using needle nose pliers, install springs previously removed.
- 68.7 Verify full range of motion. **NOTE: It may be necessary to adjust set screw shown in Figure 3-125 (set screw is in recessed area of the actuator lever). Tightening the set screw extends the actuator range of motion.**
- 68.8 Install new covers.
- 68.9 Verify tray arm has full range of motion.

MODULE/PCB LOCATOR DIAGRAMS

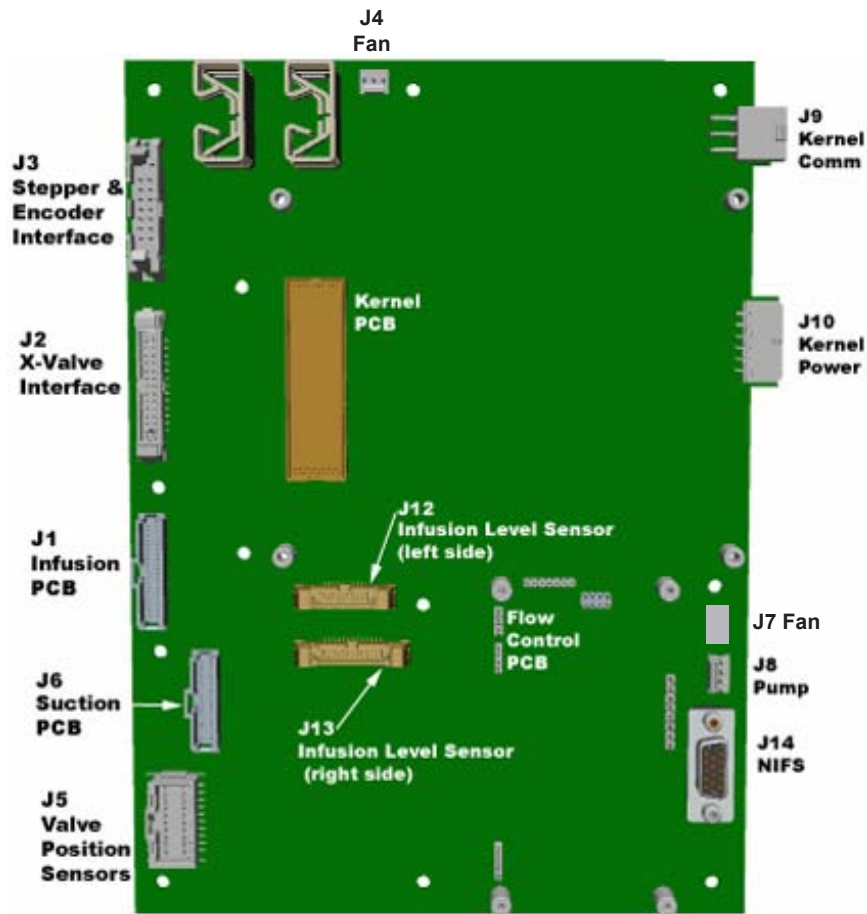


Figure 3-130 Fluidics PCB Locator Diagram

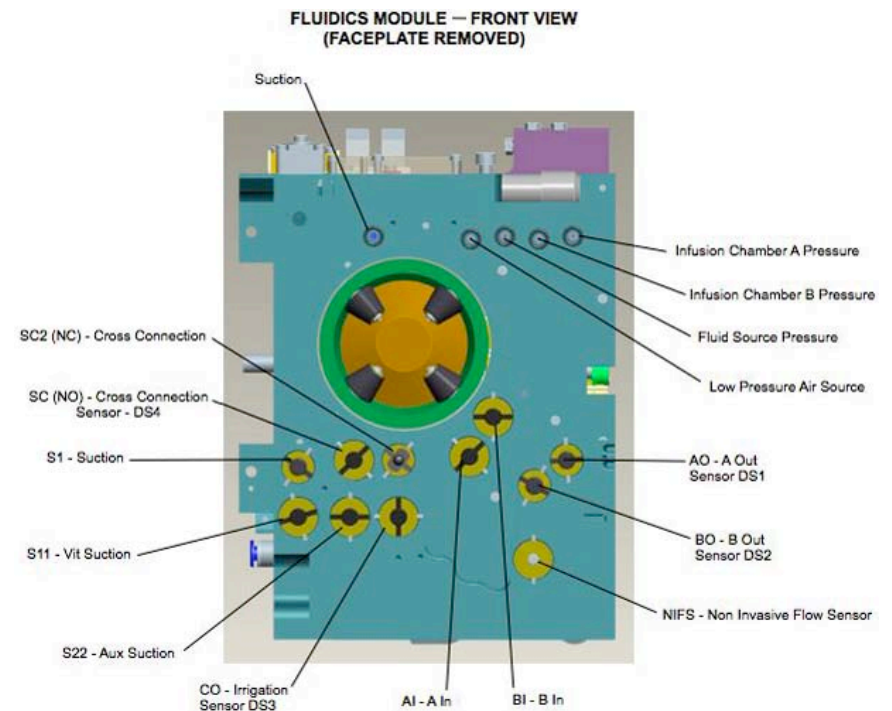


Figure 3-131 Fluidics Module Locator Diagram 1

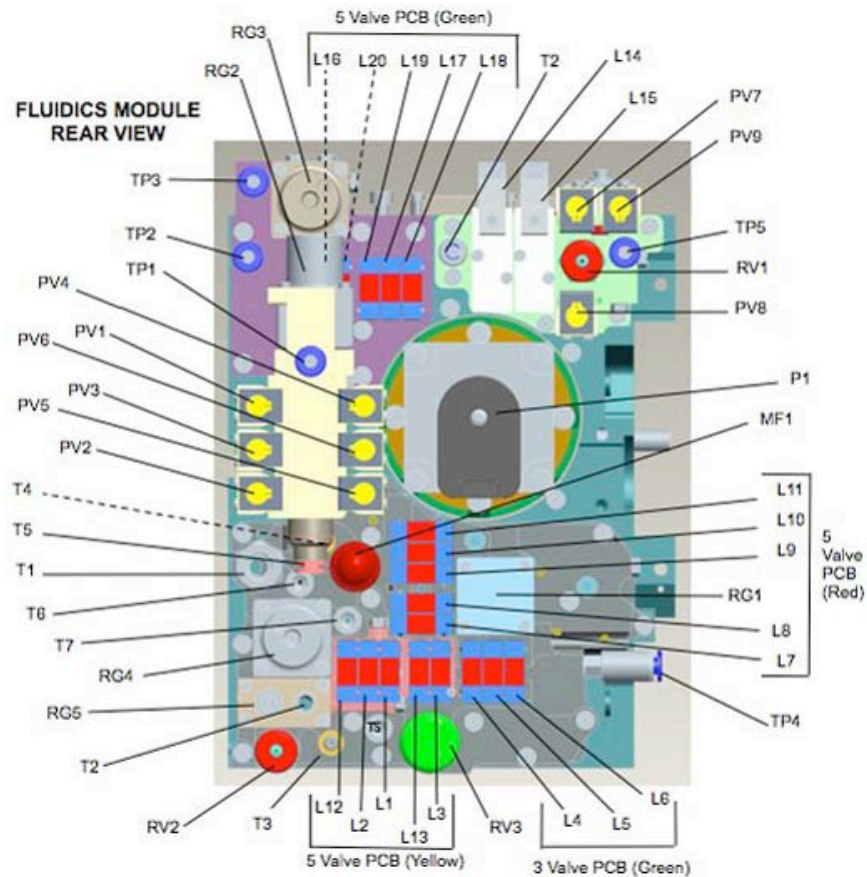


Figure 3-132 Fluidics Module Locator Diagram 2

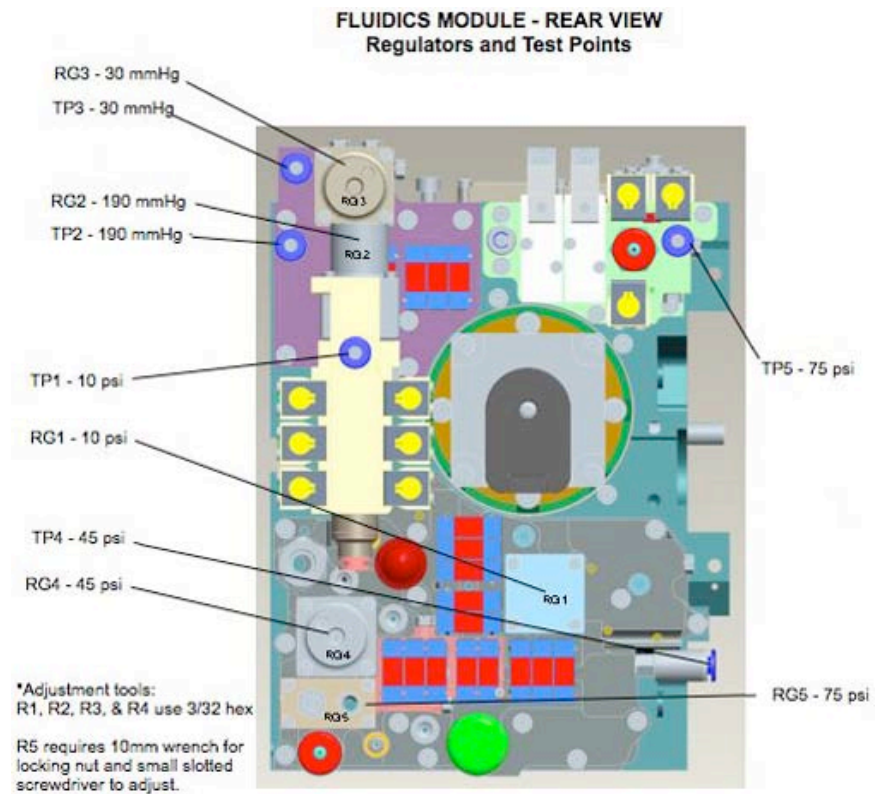


Figure 3-133 Fluidics Module Locator Diagram 3

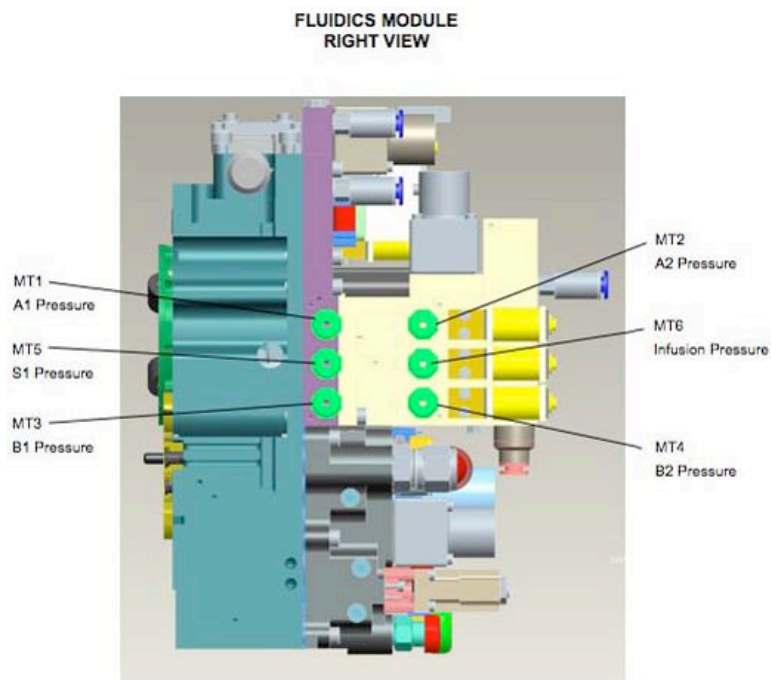


Figure 3-134 Fluidics Module Locator Diagram 4

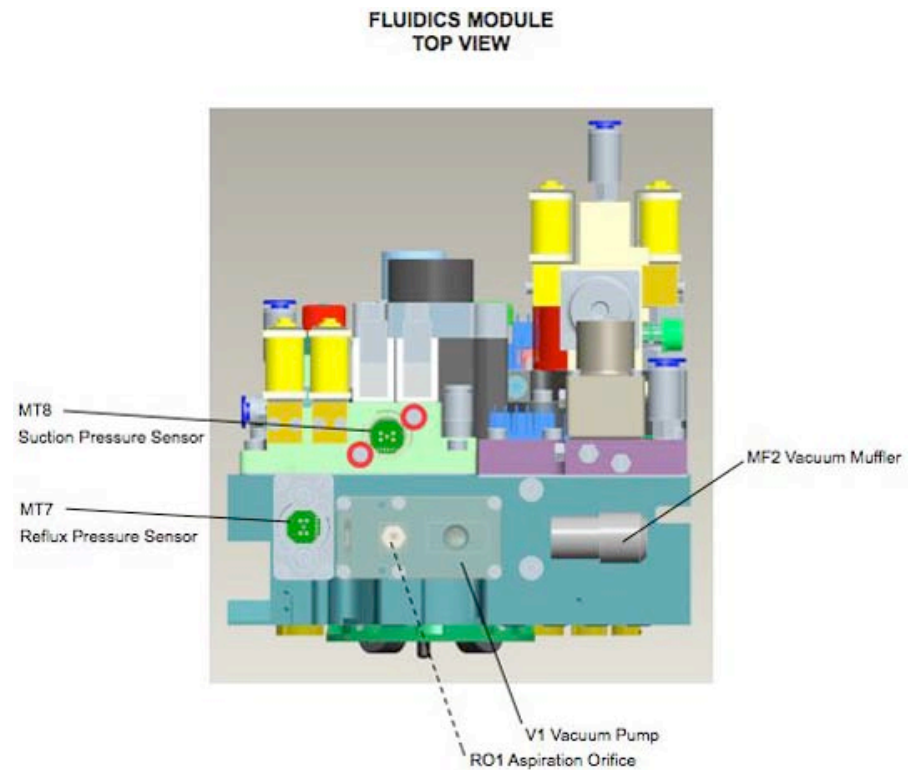


Figure 3-135 Fluidics Module Locator Diagram 5

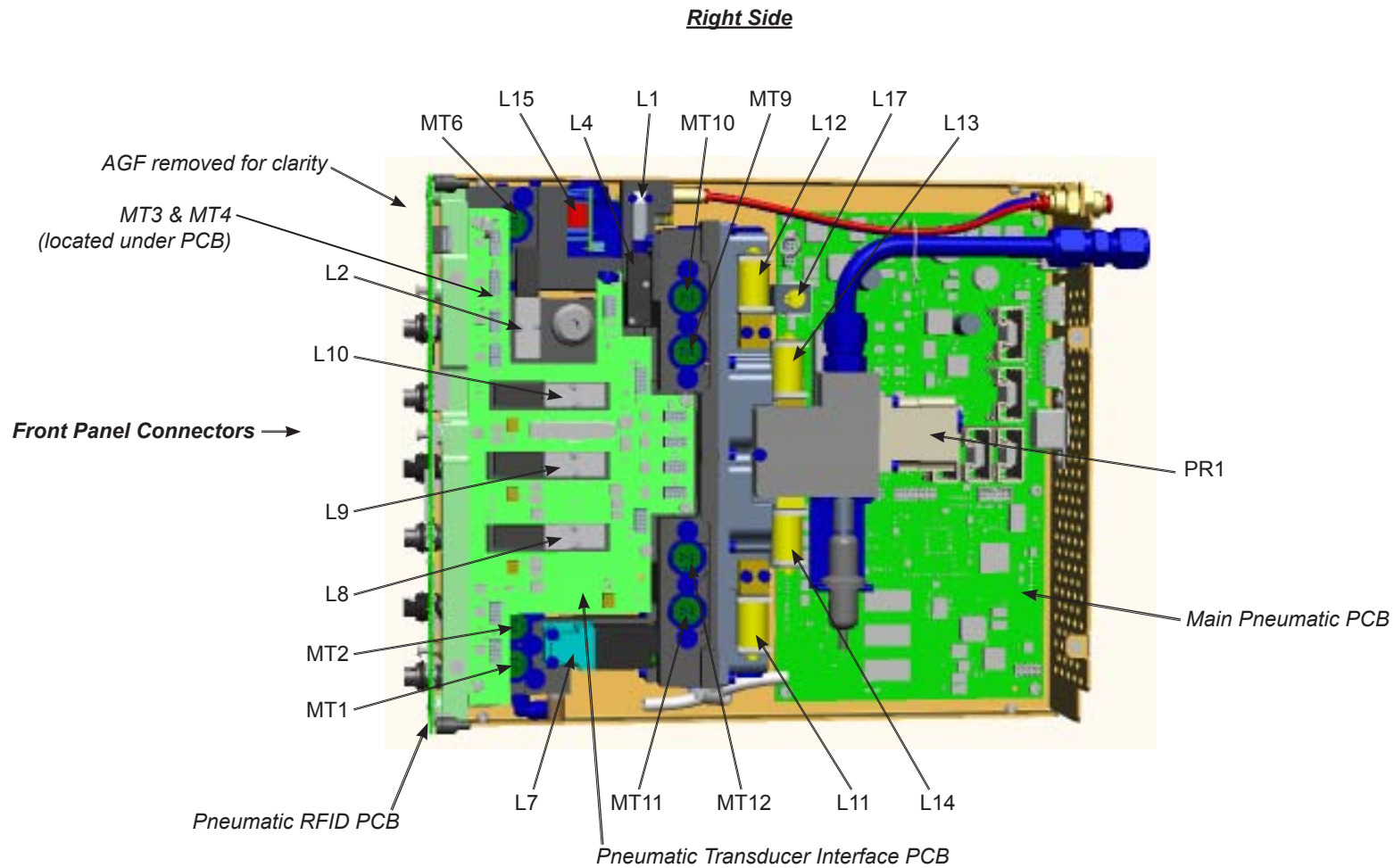


Figure 3-136 Pneumatic Module Locator Diagram 1

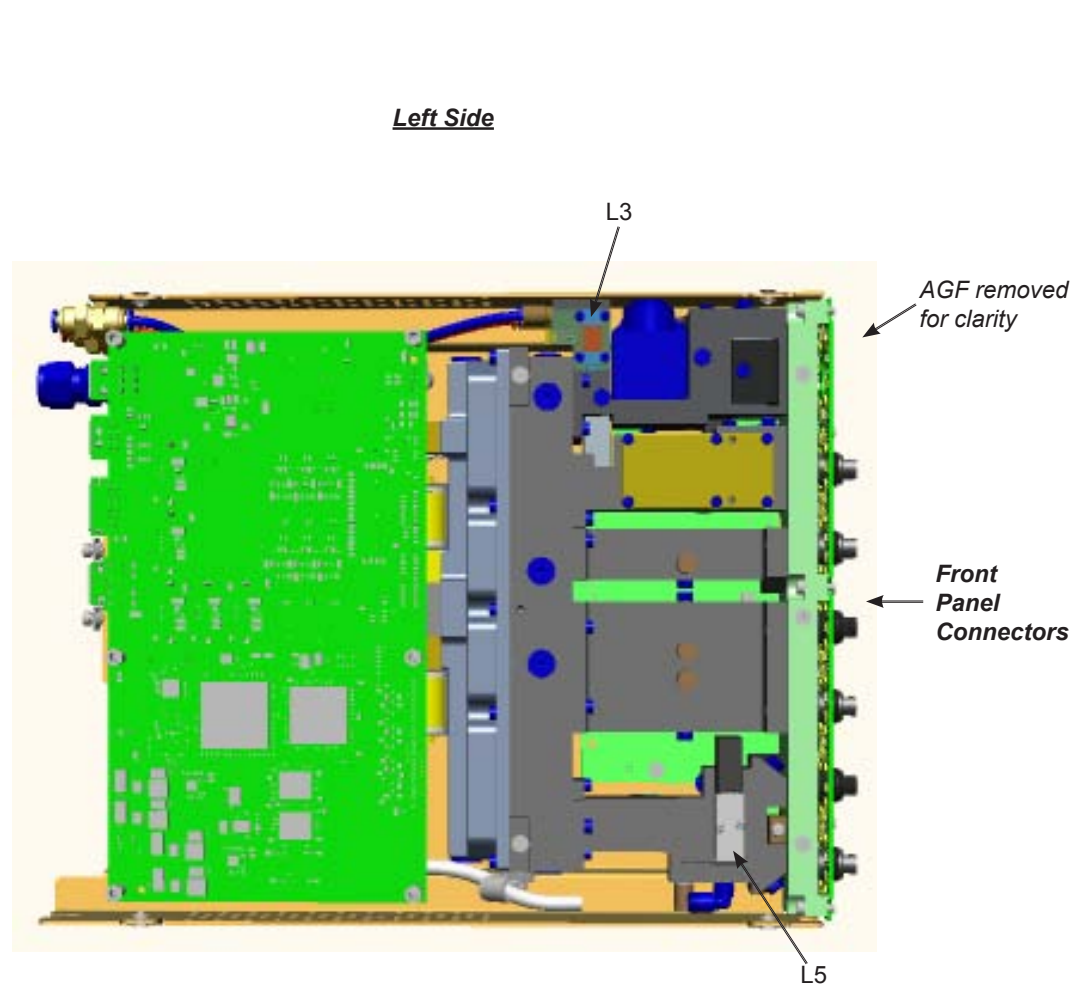


Figure 3-137 Pneumatic Module Locator Diagram 2

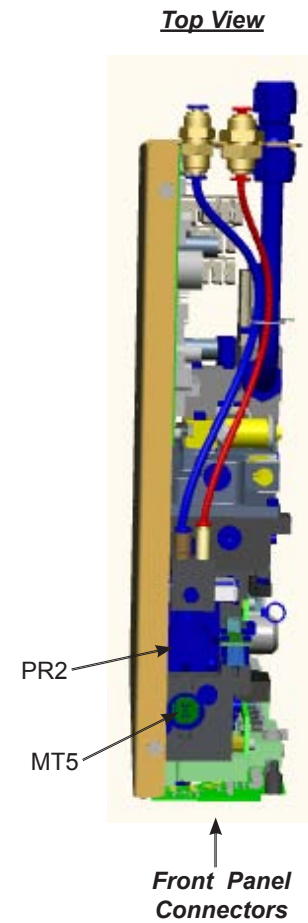


Figure 3-138 Pneumatic Module Locator Diagram 3

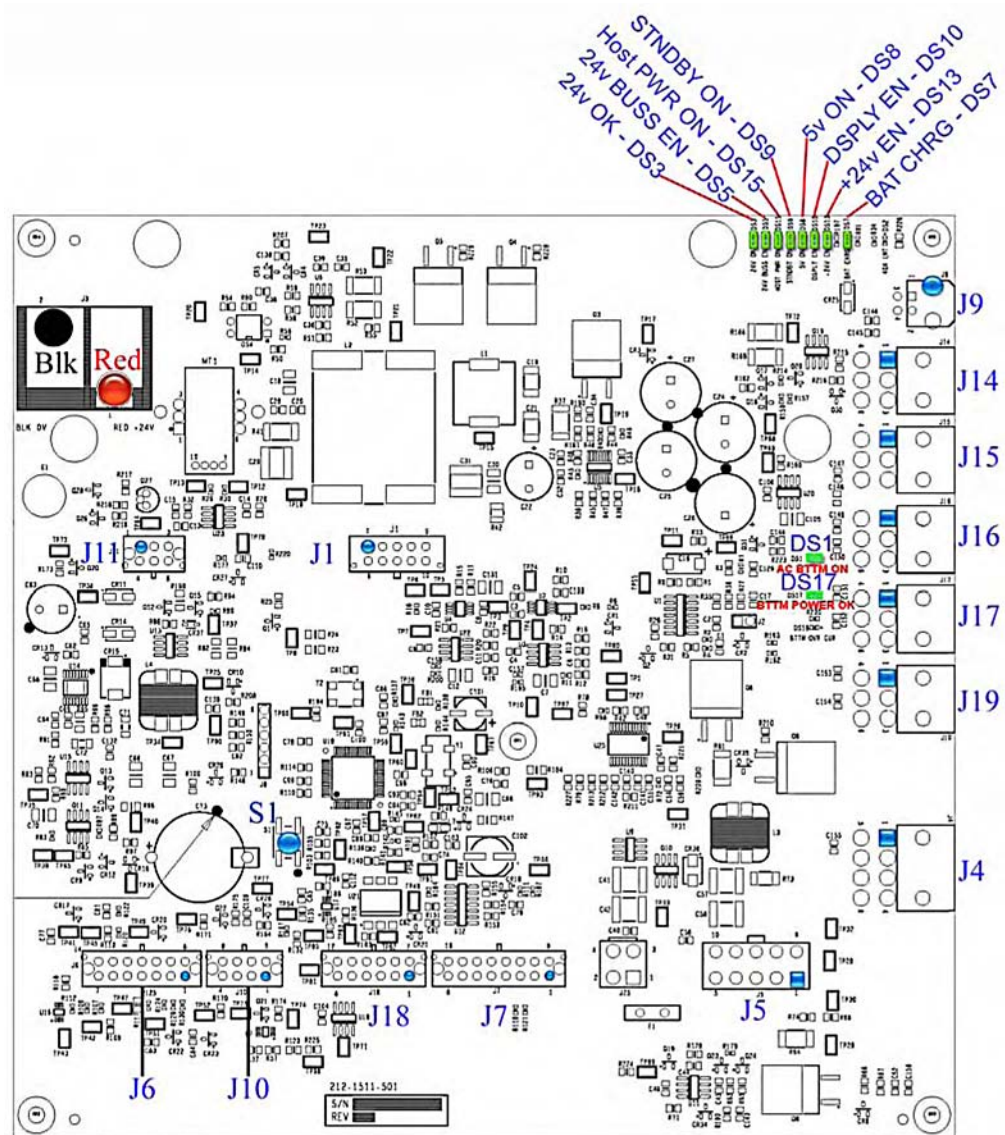


Figure 3-139 Power Controller PCB

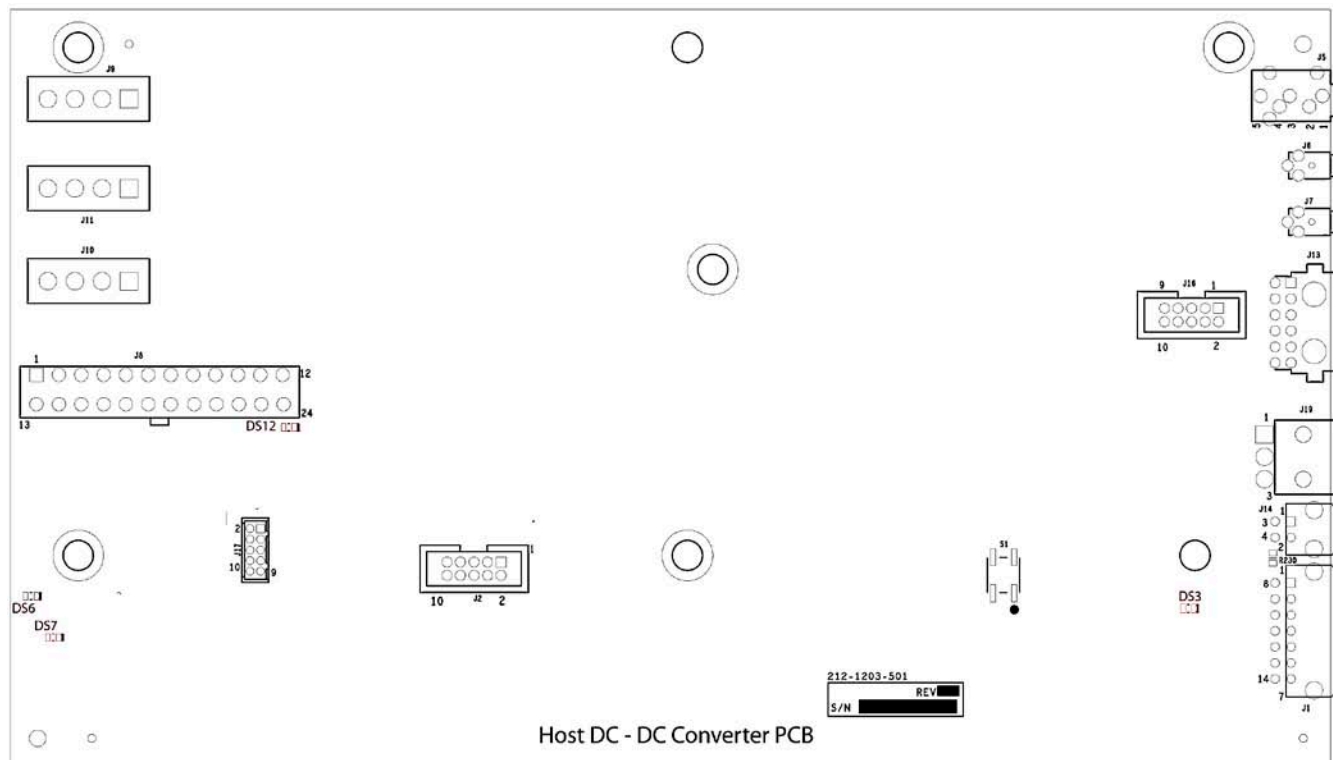


Figure 3-140 DC-DC Converter PCB

SECTION FOUR MAINTENANCE AND TROUBLESHOOTING

GENERAL INFORMATION

This section of the manual contains information to assist the Field Engineer in maintenance, troubleshooting, and repair of the *Constellation** Vision System.

CAUTION

The *Constellation system contains electrostatic discharge (ESD) sensitive devices. Always wear a wrist strap when working with this device.**

SPECIAL TOOLS AND SPARE PARTS

Table 4-1 lists the recommended tools that may be required when servicing the system. Contact Technical Services for a list of spare parts to carry while servicing the system.

SERVICE TEST PROCEDURE

It is recommended to perform the Service Test Procedure (STP) each time the system is serviced. However, the STP is only available to trained and certified individuals.

MAINTENANCE PROCEDURES

The following maintenance procedures are contained in this section:

- Connecting the system to a facility pressure source
- Water trap assembly replacement
- Illuminator lamp replacement
- Lamp disposal
- Adjusting the table top illuminator module latching mechanism
- CPC connector replacement
- Remote control battery replacement
- Table top filter removal and cleaning
- Transferring the event log
- Unpacking the tray arm assembly
- Adjusting the auxiliary illuminator module latching mechanism
- Base air filter removal and cleaning

TROUBLESHOOTING

Information regarding faults, errors, advisories, and information messages is listed in tables 4-2 through 4-11.

TABLE TOP CONSOLE MAINTENANCE PROCEDURES

1. Connecting the system to a facility pressure source.

The pressure hose is shipped in a configuration that is compatible with some facility air pressure source fittings. The shipped configuration is shown in Figure 4-1.

CAUTION

To ensure proper function of the system, all pressure source fittings and hoses used must have a minimum of 1/4 inch inside diameter like the Alcon supplied fittings and hose.

If smaller ID fittings are used in conjunction with the inlet hose fittings, system performance may be affected at "Minimal Inlet Pressure" (58.8 to 72.5 psig).

NOTE: Use thread sealant when connecting fittings.

- 1.1 Determine if facility air pressure source are compatible with the provided hose configuration.
- 1.2 Connect hose to the facility air pressure source.
- 1.3 Connect the quick disconnect fitting to the table top console rear panel.

NOTE: A right angle fitting is included with the hose assembly and may be used to replace the fitting on the console rear panel if desired. In this configuration, remove the quick disconnect fitting from the hose then thread the hose onto the right angle fitting on the rear panel (no quick disconnect).

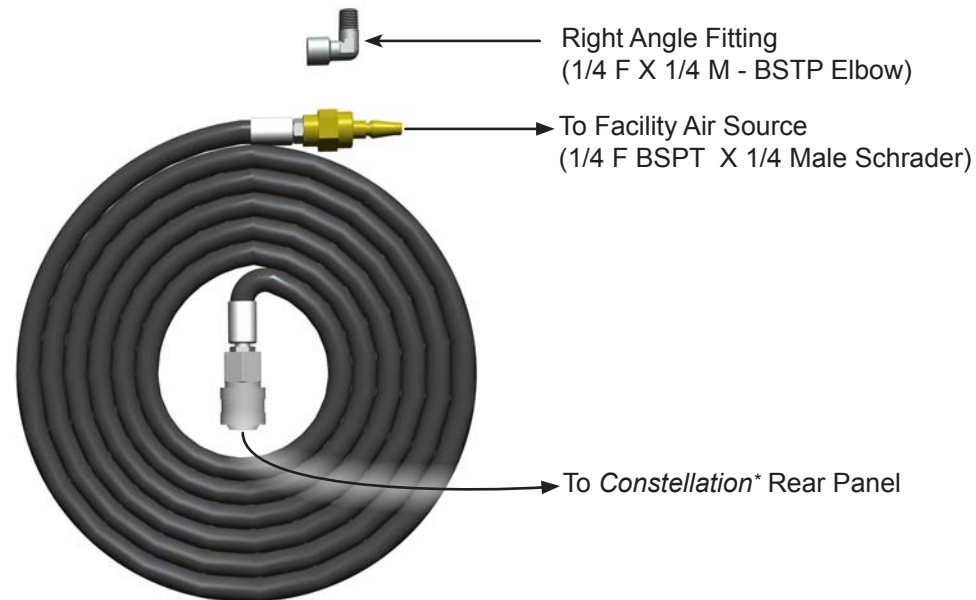


Figure 4-1 Pressure Hose Configuration for Facility with an Air Pressure Source

2. Water Trap Assembly Replacement

- 2.1 Remove top cover per step 1.
- 2.2 Loosen three captive hex screws securing Host Module to tabletop frame. Tilt Host module up and towards back of system.
- 2.3 Remove connections to Pneumatics and US modules as necessary to gain access to Water Trap assembly.
- 2.4 Remove two 2.5 mm hex screws securing Water Trap to Air Distribution Assembly (see Figure 4-2).

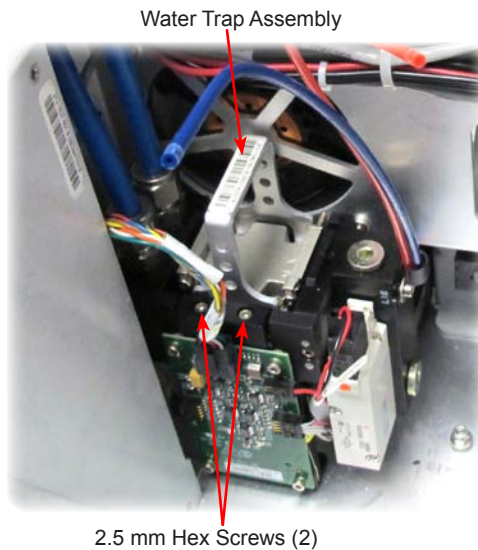


Figure 4-2 Water Trap Removal

- 2.5 Remove two 2.5 mm hex screws securing water trap to air distribution assy.
- 2.6 Grasp handle of Water Trap assy and pull assy out of Air Distribution Assy.

3. Illuminator Lamp Replacement

The *Constellation** System's xenon arc lamp is specified to last 400 hours in normal usage. Some possible indications that the lamp needs to be replaced are listed here:

- A message appears on the display stating that the lamp should be replaced.
- Repeated failure to ignite lamp.
- Flickering of output light.
- Insufficient light output.

WARNINGS!

- **Carefully follow this procedure step-by-step to ensure the lamp is properly installed. An improperly installed lamp may cause a hazardous condition resulting in compromised lamp performance or permanent damage to the Illuminator.**
- **Burn hazard exists. Do not remove lamp immediately after operation. The lamp temperature may be above 100° C. Allow lamp to cool for a minimum of five minutes before handling.**
- **Handle the lamp carefully when installing and/or uninstalling from the unit in order to prevent touching the glass to adjacent components.**
- **Do not touch the bulb glass. Contaminants from hands can cause the lamp glass to crack during use.**
- **Use eye protection when installing and uninstalling lamps. The lamp is pressurized and presents an explosion hazard if it is damaged and/or dropped, or if the glass envelope of the bulb is punctured.**
- **Do not drop the lamp.**
- **Always store the lamp in its protective housing when it is not installed in the unit.**
- **Lamp should only be changed by an Alcon technician or biomedical technician/engineer.**
- **If lamp or housing is chipped or cracked, do not use.**

- 3.1 Extinguish lamp and **wait a minimum of five minutes for lamp to cool.**
- 3.2 Press tabletop or auxiliary ejection button on the back of tabletop or base (see Figure 4-3).

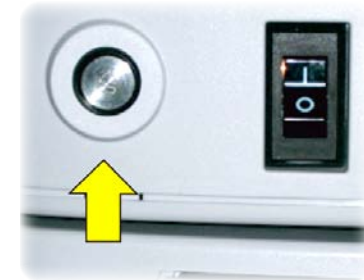


Figure 4-3 Illuminator Ejection Button

- 3.3 Pull illuminator assembly out to its full extension (see Figure 4-4).



Figure 4-4 Illuminator Module Fully Extended

- 3.4 Turn latch on top of illuminator 90° CCW and lift door up to its limit (see Figure 4-5).



Figure 4-5 Opening the Illuminator Lamp Access Door

- 3.5 While lifting the green bar of lamp clamp as shown in Figure 4-6, grasp the lamp and gently pull up to guide the lamp straight up from the lamp chamber until the lamp clamp is in the position shown in Figure 4-7.



Figure 4-6 Lifting the Illuminator Lamp Clamp While Guiding the Lamp so that it Does Not Tilt in Lamp Chamber



Figure 4-7 Lamp Clamp Final Position

CAUTION

Do not allow lamp to tilt in chamber during removal.

- 3.6 Using two hands, carefully lift lamp straight up and out of lamp chamber (see Figure 4-8).

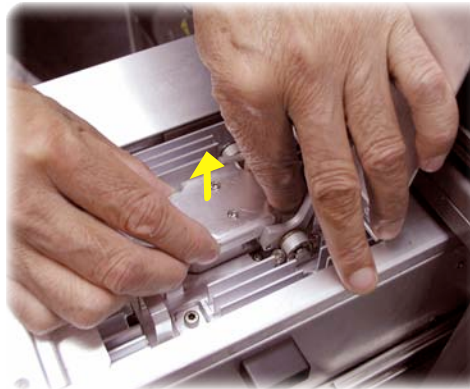


Figure 4-8 Lifting the Lamp Straight Up and Out of Lamp Chamber

- 3.7 Place lamp in its white plastic protective cover (see Figure 4-9).



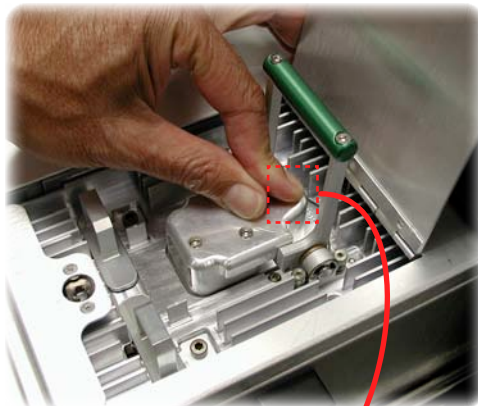
Figure 4-9 Protective Lamp Cover

- 3.8 Remove the new lamp from its shipping box.
3.9 Remove white plastic protective cover from lamp.
3.10 Using two hands, carefully align the electrical sockets to their receptacles and lower the new lamp into the lamp chamber (see Figure 4-10).



Figure 4-10 Inserting the Lamp into the Lamp Chamber

- 3.11 Press down on the front part of the lamp until it is seated in the chamber and the clamp arm is vertical as shown in Figure 4-11. The lamp flange should be slightly lower than the top of the lamp chamber.



Front of Lamp



Top of Lamp Chamber

Lamp Flange - Should be slightly lower than top of lamp chamber.

Figure 4-11 Seating the Lamp in the Chamber

- 3.12 Push down on lamp clamp until it is horizontal (see Figure 4-12).

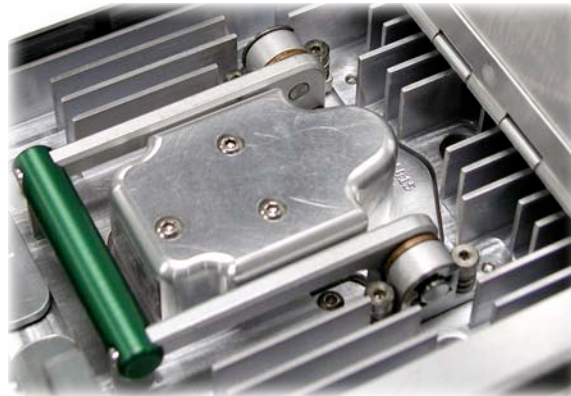


Figure 4-12 Installed Lamp with Clamp Closed

- 3.13 Close illuminator door and push down on door latch while rotating it 90° CW.

- 3.14 *For tabletop illuminators:* Place hand on **left** side of module as shown in Figure 4-13 and push illuminator assembly back into tabletop with sufficient force to engage latch.



Figure 4-13 Hand Placement While Pushing Illuminator into Tabletop

- 3.15 *For auxilliary illuminators in base:* Place hand on **right** side of module as shown in Figure 4-14 and push illuminator assembly back into base with sufficient force to engage latch.



Figure 4-14 Hand Placement While Pushing Auxilliary Illuminator into Base

- 3.16 Save white plastic protective cover and shipping carton for future lamp disposal.
- 3.17 CR4 Only - Resetting of lamp hours: Select "End Case/Options/Restricted". When "Enter Passcode" dialog is displayed, enter "7234" and press "Close" button. When the "Restricted System Settings" dialog is displayed, press appropriate "Reset" button (either Table Top or Auxiliary) and press "Save" button to exit.
- 3.18 Using a 20 GA fiber product number 8065750971, select preset of 115% and verify output is between 10-22 Lumens. Note: Connect fiber to Port 1 & 2 for Tabletop Illuminator and Port 3 & 4 for Aux Illuminator.

4. Lamp Disposal

- 4.1 Place supplied cable tie around base of lamp and white plastic protective cover to ensure they stay together (see Figure 4-15).



Figure 4-15 Cable Tie Holding Lamp Cover in Place

- 4.2 Place lamp on edge of a hard, stable surface and strike center of white plastic protective cover with a hammer or other tool with sufficient force to break glass and depressurize lamp (see Figure 4-16).



Figure 4-16 Depressurizing the Lamp

- 4.3 Place discharged lamp with its protective cover in shipping box.
- 4.4 Dispose of carton in a standard trash receptacle.

5. Adjusting the Table Top Illuminator Module Latching Mechanism

If the Table Top or Auxiliary Illuminator module is intermittently ejecting out of the locking position, the module's ejection cable may be too tight causing the latching mechanism to not completely lock the module in place. In this case, movement of the system could cause the Illuminator Module to eject by itself. This problem can be resolved by readjusting the tension of the ejection cable allowing the latching mechanism to completely lock the Illuminator Module in place.

- 5.1 Remove Power Control module per Section Three of this manual to gain access to latching mechanism shown in Figure 4-17.
- 5.2 If tension is too tight, adjust screw #1 about one full turn in direction of the arrow. Then adjust screw #2 the same way.

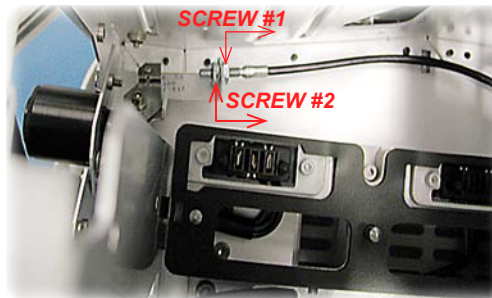


Figure 4-17 Adjusting the Table Top Illuminator Latching Mechanism

6. CPC Connector Replacement

There are three types of CPC connectors on the front panel of the Pneumatic Module: male, female, and coaxial (see Figure 4-18). The male and female pneumatic locking connectors are easily removed by inserting either a 3/32" or 1/8" hex wrench into the center of the connector and turning CCW. To replace, follow the instructions below.

- 6.1 Add a light coating of locking adhesive to threads of CPC connector (see Figure 4-19).
- 6.2 Place connector on hex wrench and insert connector into front connector panel.
- 6.3 Turn connector CW with hex wrench until it takes hold, then press and wiggle connector with your fingers until alignment ears click into their slots (see Figure 4-19).
- 6.4 Firmly tighten CPC connector with hex wrench.

The top AGF coaxial connector can be removed after removing Pneumatic Module from system.



Figure 4-18 CPC Connector Locations

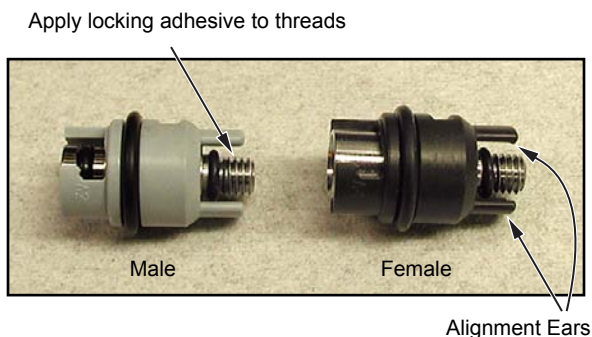


Figure 4-19 CPC Connectors

7. Remote Control Battery Replacement

- 7.1 Remove two screws from bottom of remote.
- 7.2 Wiggle two halves of remote to access inside.
- 7.3 Remove spent batteries and replace with new AAA batteries. Orient batteries as diagramed in base. Spin batteries in base to ensure good electric connection.
- 7.4 Grasp two halves of remote and tip edges together as shown (see Figure 4-20). Two tabs inside bottom edge of remote must match up with two notches in other half of remote.
- 7.5 Gently place two halves together.
NOTE: Observe rubber buttons shown in Figure 4-21 while putting two halves together. The rubber buttons must slide into slots in other half of remote without binding.
- 7.6 Secure two halves of remote together with two captive screws.
- 7.7 Squeeze rubber buttons on side of remote. If batteries are installed correctly, backlights will illuminate on face of remote, then turn off after a few seconds.
NOTE: If backlights do not turn off, rubber buttons are not properly inserted into slots, so you must repeat procedure.

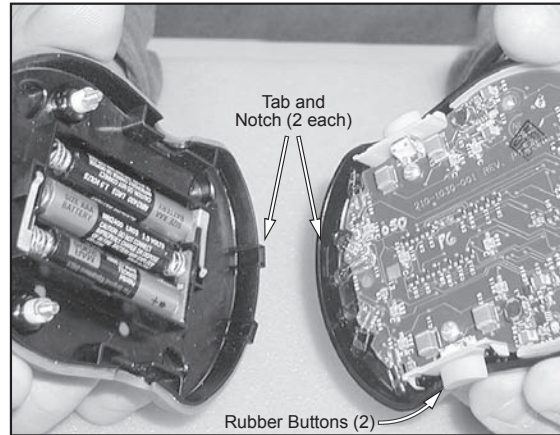


Figure 4-20 Two Halves of Remote Control

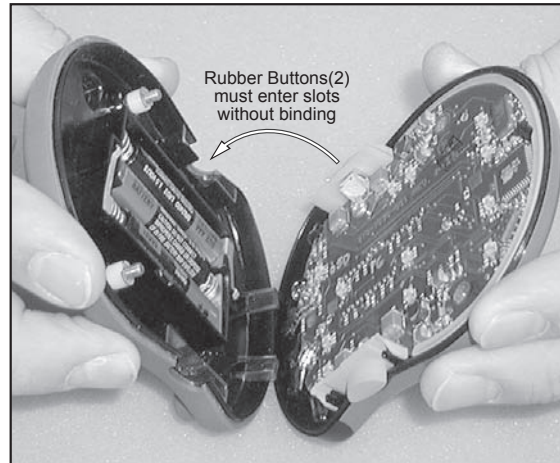


Figure 4-21 Proper orientation of two halves of remote control

8. Host Module Air Filter Removal and Cleaning

- 8.1 Remove top cover per section three.
- 8.2 Loosen two 3 mm captive screws securing filter to host module (see Figure 4-22).

Host Module Air Filter

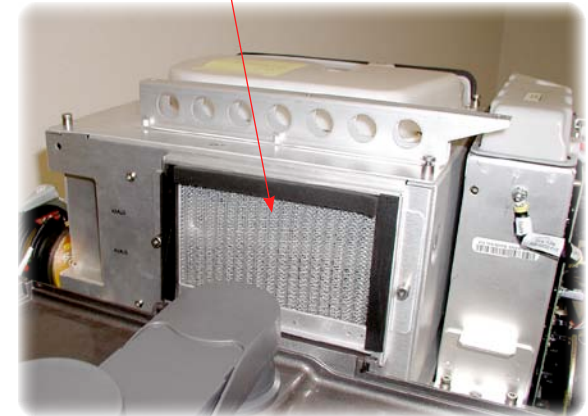


Figure 4-22 Host Module Air Filter

- 8.3 Remove filter from assembly and clean in soapy water, then shake it dry.
- 8.4 Reinstall air filter.

9. Table Top Console Air Filters Removal and Cleaning

- 9.1 Press center of filter faceplate to release from console (see Figure 4-23).



Console Air Filter #1



Console Air Filter #2

Notch in filter frame that fits on standoff in console.

Figure 4-23 Console Air Filter Locations

- 9.2 Filter #2 is located on the left side of the console in the open area left by filter #1. Grasp edge of Filter #2 and pull from console. Notice how filter is fitted to standoff on console for replacement (see Figure 4-23).
- 9.3 Remove filters from frame assembly, clean in soapy water, then shake dry.
- 9.4 Reinstall air filters.

SOFTWARE MAINTENANCE PROCEDURES

1. Transferring the Event Log

The Technician's Log compresses the information so it can be emailed. The selection that leads to the Technician's Log is Options>View/Copy/Delete>. The steps to retrieve the Event Log from the system and save it in your computer are as follows (see Figure 4-24).

Steps to Retrieve Event Log from *Constellation** System:

- 1.1 Insert SD card. Card must be 2GB or below.
- 1.2 Select "Options>View/Copy/Delete".
- 1.3 In "Source" pane select:
"System>Technician's log".
- 1.4 In Destination Pane, select "SD-Card".
- 1.5 Press center arrow to queue data.
- 1.6 When "Technician's log Copy" is no longer displayed, press "Write" (in lower right box).
- 1.7 When complete the message "The data was successfully written" will appear. Press "OK". The Technician's log should now be on the SD-Card.

Steps to Retrieve Log File from SD-Card:

- 1.8 Insert SD-Card into Computer Card reader.
- 1.9 When viewed on computer, log file name will include the system serial number and "ConstellationLog.AlconLogBatch".
- 1.10 Copy from SD-Card and attach to email.

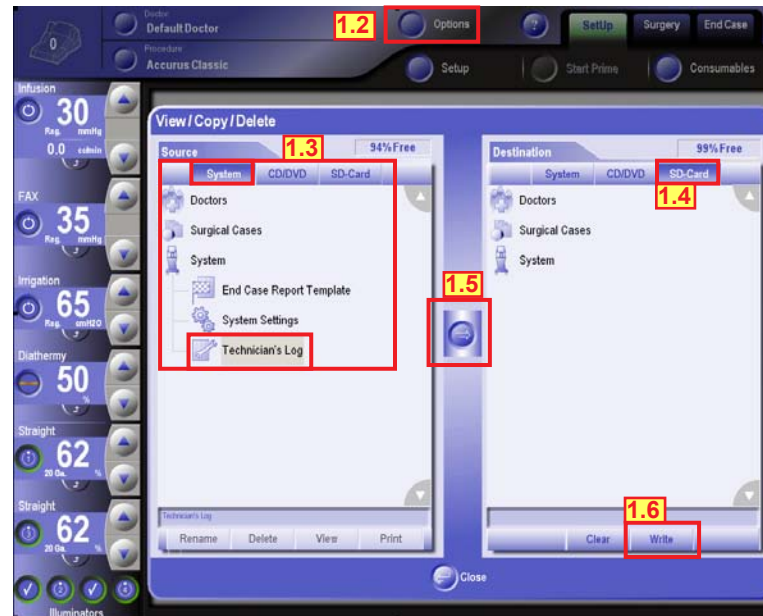


Figure 4-24 Transferring the Event Log

BASE MAINTENANCE PROCEDURES

1. Unpacking the Tray Arm Assembly

CAUTION

Care must be taken when unpacking the tray/arm assembly in order to avoid damaging the internal mechanisms of the assembly. Be sure to unpack the assembly as described in this procedure.

- 1.1 Place tray arm assembly box in an appropriate place for unpacking and open box.
- 1.2 Lift end of tray arm assembly up from foam insert as shown in Figure 4-25. Foam insert has cut-out areas where hands may be inserted to grasp tray arm.

CAUTION

Do not lift tray arm assembly by tray handle - damage may occur to the internal mechanisms of the assembly.



DO NOT LIFT TRAY ARM ASSEMBLY BY TRAY HANDLE!

Figure 4-25 Tray Arm Assembly in Shipping Box

- 1.3 While continuing to hold end of tray arm up, reach under tray arm at the opposite end and lift tray arm assembly up and out of box as shown in Figures 4-26.



Figure 4-26 Removing the Tray Arm Assembly from Shipping Box

- 1.4 Place tray arm assembly on a work surface to prepare for installation on base.

CAUTION

When the tray arm is installed on the column support, **DO NOT** push or pull on the tray arm without pulling the green release handle - damage to sensitive components may result (see Figure 4-27).



Figure 4-27 Tray Arm CAUTION - DO NOT push or pull on the tray arm without pulling the green release handle - damage to sensitive components may result.

2. Adjusting the Auxiliary Illuminator Module Latching Mechanism

- 2.1 Remove two screws securing auxiliary illuminator rear cover to base.
- 2.2 Remove two screws securing latching mechanism to base.
- 2.3 Pull latching mechanism out of base as shown in Figure 4-28.
- 2.4 If tension is too tight, adjust screw #1 about one full turn in direction of the arrow. Then adjust screw #2 the same way.



Figure 4-28 Adjusting the Auxiliary Illuminator Latching Mechanism

3. Replacing the Auxiliary Illuminator Lamp (see Table Top Illuminator Lamp replacement).

4. Base Air Filter Removal and Cleaning

- 4.1 Push air filter faceplate in then release (see Figure 4-29). Faceplate/filter assembly will release from quick release fastener and extend out from system.

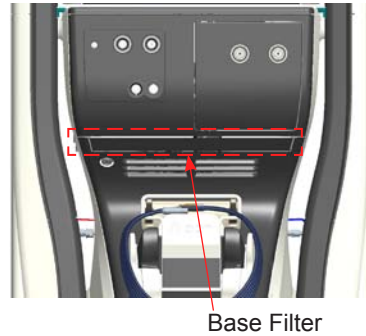


Figure 4-29 Base Filter Location

- 4.2 Pull faceplate/filter assembly from system.
- 4.3 Remove filters from frame assembly, clean in soapy water, then shake dry.
- 4.4 Reinstall air filters.

SYSTEM MESSAGES

The system communicates information to the user through the display of System Messages which are displayed and described to the user as Faults, Errors, Advisories or System Information. These terms are used to classify the level of response required to ensure fail-safe operation of the system. The presentation of a System Message alone does not indicate that a malfunction has occurred. System Messages typically occur when the system detects a condition that is not met but is required for the system to continue. System Messages and associated actions are intended functions presented as a precursor to mitigate an unanticipated condition.

System Messages are priority based, with Fault Messages being the highest priority, followed by Error Messages, Advisory Messages, and Information Messages. Each type of message is color coded as follows:

- Fault:
 - Recoverable Fault - Red stop sign with blue background
 - Unrecoverable Fault - Red stop sign with black background
- Error - Yellow
- Advisory - Green
- Information - Blue

Each message also has a number associated with it that indicates the submodule that prompted the message. The number range for each submodule in the system is assigned as follows:

- Host Submodule - 1000 to 1999
- Supervisor Submodule - 2000 to 2999
- Fluidics Submodule - 3000 to 3999
- US/Diathermy Submodule - 4000 to 4999
- Table Top Illuminator Submodule - 5000 to 5999
- Pneumatics Submodule - 6000 to 6999
- Auxillary Illuminator Submodule - 7000 to 7999
- Laser Submodule - 8000 to 8999

There are common submodule Kernel Codes that have the same suffix (last 3 digits) across every module and are listed in Table 4-3. In the event that the software did not write properly from the Host to the module, the code may go away when the system is rebooted. 1000 series (Host) codes generally are faults that occur upon initialization. Codes that are specific to each module are listed in Tables 4-4 through 4-11.

System Fault Messages

System Fault messages are displayed full screen and come in two types: Recoverable and Unrecoverable as shown in Figure 4-30.

The system performs the following actions when a fault condition is detected:

- The applicable System Fault screen is shown with appropriate Fault Number and one or more acknowledgment buttons.
- A fault tone is generated.
- All surgical functions are placed in a safe state.
- All operator input from the touch screen and footswitch is ignored (with the exception of the [Start Recovery], [Quick Start], and [Shutdown] buttons).

Recoverable System Fault Display Screen



Unrecoverable System Fault Display Screen



Figure 4-30 System Fault Display Screen Examples

The majority of all generated system faults are recoverable and the displayed Fault message includes the following recovery instructions: Recovery Instructions:

1. Stabilize eye. Leave infusion cannula in, remove other instruments (i.e. vit probe/ illuminator) and plug trocar cannulas/ sclerotomies.
2. Press the "Start Recovery" button.
3. Wait for recovery to complete and continue the case.

After the system recovers from a fault, the system state is restored to the state when the fault occurred.

System Error Messages

System Error messages are displayed in a popup window as shown in Figure 4-31. These messages are displayed when the system detects a condition that is not met and requires partial elements of the system to shutdown in a safe state. The partial shutdown cannot be reversed until the next power cycle. The system performs the following actions when an error is detected. The System Error dialog is shown with the appropriate error number, description, and buttons. The upper right corner shows the name of the submodule generating the error. An error tone is generated.

All surgical functions associated with the error become unavailable. These functions are also put into a safe state and are grayed out on the touch screen.

The System Error dialog is removed when the operator presses either Recover or Cancel. If the Cancel button is pressed, no attempt is made to recover and the related surgical function is unavailable and its buttons grayed-out. In this case, pressing a grayed-out (unavailable) surgical function, the System Error dialog is displayed again with the same error number. If the Recover button is pressed, an Error Recovery popup is displayed as shown in Figure 4-31. This popup contains instructions on how to step through the recovery process. Upon pressing the Start Recovery button, the recovery sequence is initiated and an attempt is made to recover (reset and restart) the failed module. After recovery is complete, the system displays a message indicating whether or not the recovery was successful.

Pressing the Cancel button in the Error Recovery popup, removes the popup and continues system operation without attempting to recover the failed module.



Figure 4-31 System Error Popup Window

System Advisory Messages

System Advisory messages are displayed in a popup window as shown in Figure 4-32. Advisory messages are displayed when the system detects that a minor condition is not being met, typically a situation that can be corrected by the user. When an advisory condition is detected, the system performs the following actions:

The System Advisory popup is shown with an appropriate advisory number, description, and one or more acknowledgment buttons. The upper right corner also shows the name of the submodule generating the advisory. An advisory tone is generated.

The System Advisory popup is removed when the operator presses a button to acknowledge the advisory or the condition causing the advisory no longer exists. Certain advisory messages that only present a single user response button may also be configured to automatically fade away.

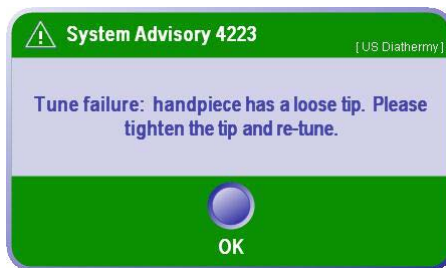


Figure 4-32 System Advisory Popup Window

System Information Messages

Information messages are displayed in a popup window as shown in Figure 4-33. Information messages are displayed to advise the user of the current system state based upon current user interaction. When an information condition is detected the following actions occur:

A System Information dialog is displayed with appropriate information number, description, and one or more acknowledgment buttons. The upper right corner also shows the name of the submodule generating the informational discrepancy.

An information tone is generated. The System Information dialog is removed when the operator presses a button to acknowledge the informational discrepancy or the condition causing the informational discrepancy no longer exists. Certain informational messages that only present a single user response button may also be configured to automatically fade away.

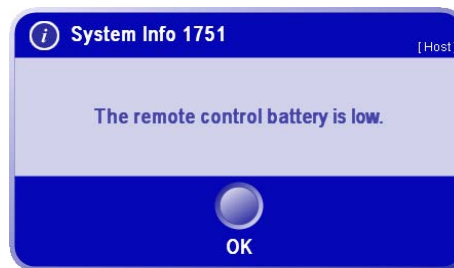


Figure 4-33 System Information Popup Window

Table 4-2 General Troubleshooting by Symptom without System Message Displayed

Module	Symptom	Possible Causes
Tray Arm	Tray Arm locks and is unable to move.	<ul style="list-style-type: none"> • Broken locking blades • Bent pins • Misplaced Spring • Loose Set Screw
Illuminator	Poor or no Illumination	<ul style="list-style-type: none"> • Illuminator Module not fully seated/ Eject and reseal • Misaligned lamp • Faulty Lamp • Faulty Illuminator Module
Illuminator	Unable to latch in place	<ul style="list-style-type: none"> • Latch cable needs adjustment • Latch Assembly not springing back
Laser Footswitch	Unable to secure connector to rear panel.	Broken connectors on Footswitch and rear panel Interface PCB
CVS Footswitch	Unable to activate heel switch	Footswitch corrosion
Tabletop	Power On/Off Problem	1. White Screen
		<ul style="list-style-type: none"> • SD Ram • Motherboard • Host Module • LCD Cable W12
		2. Blue Screen
		<ul style="list-style-type: none"> • SD Ram • Motherboard • Host Module
		3. Stuck in Splash Screen
		<ul style="list-style-type: none"> • Verify which Splash screen is displayed to determine if problem is in loading BIOS, Operating System or Application Software
		4. Cannot shut down
		<ul style="list-style-type: none"> • Disconnect / reconnect Backup Battery • Power Controller • Host Module
		5. Dark Screen
		<ul style="list-style-type: none"> • Missing 24 Volts Power Cable from Power Controller to Host - W46 • Power Controller PCB • Power cable to Host Display PCB - W68 • Host Display PCB • Display Voltage Cable - W13 • Backlight Inverter PCB • LCD Display

Table 4-3 Common Sub-Module Kernel Codes – X000 to X099

PREFIX DEFINITIONS: Supervisor - X = 2; Fluidics - X = 3; US/Diathermy - X = 4; TT Illuminator - X = 5; Pneumatics - X = 6; Aux Illuminator - X = 7; Laser - X = 8;

Warning Code	Classification	Displayed Text	Description	Possible Corrective Actions
X001	Error	Sub module system software error detected.	OSE_ERROR_CODE Internal OSE RTOS error.	<ul style="list-style-type: none"> Application Software - Reload Controller PCB.
X005	Error	Sub module failure (+5V).	KRNL_5_VOLTS_IS_BAD Kernel +5 Voltage is bad.	<ul style="list-style-type: none"> Controller PCB
X006	Error	Sub module failure (+3.3V).	KRNL_3_3_VOLTS_IS_BAD Kernel +3.3 Voltage is bad	<ul style="list-style-type: none"> Controller PCB
X007	Error	Sub module failure (ADC reference).	KRNL_ADC_REF_IS_BAD Kernel Voltage Reference is bad	<ul style="list-style-type: none"> Controller PCB
X008	Error	Sub module application failed to load.	KRNL_PRG_LOAD_FAILED The kernel failed loading a load module component. Attempted to load application code from Host and it failed.	<ul style="list-style-type: none"> Application Software - Reload Controller PCB.
X009	Error	Sub module application failed to start.	KRNL_PRG_START_FAILED The kernel failed starting a load module component. Software has downloaded, but module failed to run	<ul style="list-style-type: none"> Controller PCB
X013	Error	Sub module software failure (watchdog timeout).	KRNL_WD_TIME_OUT Watchdog had a task timeout.	<ul style="list-style-type: none"> Controller PCB
X015	Error	Sub module failure (voltage checker).	KRNL_VOLTAGE_CHECKER_UNDERRUN Kernel Voltage checker ADC underrun.	<ul style="list-style-type: none"> Controller PCB
X017	Error	Sub module failure (+24V).	KRNL_24_VOLTS_IS_BAD Kernel +24 Voltage is bad.	<ul style="list-style-type: none"> Power Cable Controller PCB
X018	Error	Sub module failure (+1.5V).	KRNL_1_5_VOLTS_IS_BAD Kernel +1.5 Voltage is bad.	<ul style="list-style-type: none"> Controller PCB
X024	Error	Sub module failure (+1.2V).	KRNL_1_2_VOLTS_IS_BAD Kernel +1.2 Voltage is bad.	<ul style="list-style-type: none"> Controller PCB
X025	Error	Sub module failure (reference voltage A).	KRNL_REF_A_IS_BAD Kernel Voltage Reference A is bad.	<ul style="list-style-type: none"> Controller PCB
X026	Error	Sub module failure (reference voltage B).	KRNL_REF_B_IS_BAD Kernel Voltage Reference B is bad.	<ul style="list-style-type: none"> Controller PCB
X027	Error	Sub module failure (reference voltage C).	KRNL_REF_C_IS_BAD Kernel Voltage Reference C is bad.	<ul style="list-style-type: none"> Controller PCB

Table 4-3 Common Sub-Module Kernel Codes – X000 to X099

PREFIX DEFINITIONS: Supervisor - X = 2; Fluidics - X = 3; US/Diathermy - X = 4; TT Illuminator - X = 5; Pneumatics - X = 6; Aux Illuminator - X = 7; Laser - X = 8;

Warning Code	Classification	Displayed Text	Description	Possible Corrective Actions
X028	Error	Sub module failure (+2.5V).	KRNL_2_5_VOLTS_IS_BAD Kernel +2.5 Voltage is bad.	<ul style="list-style-type: none"> Controller PCB
X029	Error	Sub module failure (FPGA).	KRNL_FPGA_NOT_READY The FPGA ready bit is not set.	<ul style="list-style-type: none"> Controller PCB
X030	Error	Sub module failure (communication error).	KRNL_SUPERVISOR_COMM_LOSS The Kernel Status Handler lost communication with the Supervisor module.	<ul style="list-style-type: none"> Ethernet Cable Supervisor PCB
X033	Error	Sub module failure (watchdog test).	KRNL_WD_INIT_TEST_FAILED The watchdog startup test failed on power up.	<ul style="list-style-type: none"> Controller PCB
X035	Error	Sub module failure (ECC memory error).	KRNL_RAM_RUNTIME_FAILED Bad SDRAM ECC errors were detected.	<ul style="list-style-type: none"> Controller PCB
X037	Error	Sub module failure (Ethernet receiver).	KRNL_FCC_INTERNAL_RX_ERROR CRC Error on Ethernet communication.	<ul style="list-style-type: none"> Ethernet Cable Controller PCB
X038	Error	Sub module failure (Ethernet transmitter).	KRNL_FCC_INTERNAL_TX_ERROR CRC Error on Ethernet communication.	<ul style="list-style-type: none"> Ethernet Cable Controller PCB
X039	Error	Sub module failure (+12V).	KRNL_12V_VOLTAGE_IS_BAD Kernel 12 Voltage is bad error (Pneumatics and Fluidics modules only).	<ul style="list-style-type: none"> Controller PCB
X050	Error	Sub module failure (software).	CMN_SW_ERR - A sub module software error was detected. Similar to 1014 for the Host system. NOTE: Table Top Only will show 2050 not 5050 because Table Top communicates through Supervisor)	<ul style="list-style-type: none"> Application Software - Reload Controller PCB.
X051	Error	Sub module failure (invalid parameter).	CMN_PARAM_ERR - An invalid parameter value was passed to a function.	<ul style="list-style-type: none"> Controller PCB
X053	Error	Sub module failure (ADC timeout).	CMN_ADC_TIMEOUT - Timeout waiting for the ADC done bit to get set.	<ul style="list-style-type: none"> Controller PCB
X054	Error	Sub module failure (DAC timeout).	CMN_DAC_TIMEOUT - Timeout waiting for the DAC busy bit to be cleared.	<ul style="list-style-type: none"> Controller PCB
X055	Error	Sub module failure (critical data invalid).	CMN_CRITICAL_DATA_ERR - Critical data parameter error. The data and the inverted value do not match.	<ul style="list-style-type: none"> Controller PCB
X056	Error	Sub module failure (watchdog non-operational).	CMN_WD_ATTACH_ERR - Received an attach signal indicating that the kernel watchdog process died.	<ul style="list-style-type: none"> Controller PCB

Table 4-3 Common Sub-Module Kernel Codes – X000 to X099

PREFIX DEFINITIONS: Supervisor - X = 2; Fluidics - X = 3; US/Diathermy - X = 4; TT Illuminator - X = 5; Pneumatics - X = 6; Aux Illuminator - X = 7; Laser - X = 8;

Warning Code	Classification	Displayed Text	Description	Possible Corrective Actions
X057	Error	Sub module failure (supervisor timeout)	CMN_SUPERVISOR_TIMEOUT_ERR - Supervisor set point message timeout. The supervisor did not send set point messages at the correct rate when a surgical function was active.	<ul style="list-style-type: none"> • Ethernet cables • Supervisor • Controller PCB • Footswitch Cable
X059	Error	Sub module failure (access violation).	CMN_ACCESS_ERR - A process tried to access a resource without sufficient privileges.	<ul style="list-style-type: none"> • Controller PCB
X061	Advisory	Sub module failure (unknown message)	CMN_UNKNOWN_SIG_ERR - A signal not recognized by a process was received. The extra parameter contains a pointer to the unknown signal.	<ul style="list-style-type: none"> • Controller PCB
X062	Error	Submodule failure (triggered to demonstrate recovery functionality).	Error intentionally generated by the Host to test submodule error recovery functionality. Used for user training purposes.	<ul style="list-style-type: none"> • N/A
X099	Error	Sub module failure (no communication with Host)	CMN_SUBSYSTEM_UNAVAILABLE_ERR - The Host did not receive a Sub module information message within approximately 3 1/2 minutes after the splash screen was removed after power up or restart. NOTE: Laser and Auxiliary Illuminators are exempt from this error due to the fact that their power state/ejection state can change at anytime and be reset.	<ul style="list-style-type: none"> • Controller PCB

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1001	Fault	Fault - 1001 Call Field Service	OseGatewayDownFlt - The OSE Gateway exited unexpectedly.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host Supervisor
1002	Fault	Fault - 1002 Call Field Service	SupervisorProcessDownFlt - The OSE Gateway has reported that the Supervisor process has gone down.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Supervisor
1003	Fault	Fault - 1003 Call Field Service	SupervisorCommErrorFlt - Something has failed in the communication between the Host and the Supervisor.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host Supervisor
1004	Fault	Fault - 1004 Call Field Service	MainApplicationDownFlt - The Main Application exited unexpectedly.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Application Software - Install SDRAM - Reseat or Replace Host Supervisor
1005	Fault	Fault - 1005 Call Field Service	CrcChecksumFailureFlt – The Host Controller checksum validation failed to pass all files under its control.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host Supervisor
1006	Fault	Fault - 1006 Call Field Service	MainApplicationFailed ToConnectToSupervisorFlt The Host has failed to connect to the Supervisor process.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Signal/Ethernet Cable W17. Host Module Supervisor 24V Supply to Supervisor
1007	Fault	Fault - 1007 Call Field Service	HostControllerSoftwareErrorFlt - The Host Controller encountered an unexpected error.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host Supervisor
1008	Fault	Fault - 1008 Call Field Service	HostControllerExeLaunchFlt - The Host Controller failed to launch an executable image during startup.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Reset Power Controller
1009	Fault	Fault - 1009 Call Field Service	PowerModuleCommFailureFlt - The Host Controller could not communicate with the Power Module over the serial link	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host Module Power Controller PCB
1010	Fault	Fault - 1010 Call Field Service	VersionCheckFailureFlt- Component or Submodule reported an incorrect software, hardware, firmware or other version	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Verify correct Software OS and Application are installed. Reinstall OS or Application Software
1011	Fault	Fault - 1011 Call Field Service	IpcProxyMissingFlt – Host Controller communications was lost as the result of a .NET IPC failure	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host Supervisor
1012	Fault	Fault - 1012 Call Field Service	MissingSupervisorHeartbeatFlt The Host has not received any heartbeats from the Supervisor within the required timeframe.	<ul style="list-style-type: none"> Supervisor Ethernet cable W17 Host

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1013	Fault	Fault - 1013 Call Field Service	UiThreadUnresponsiveFlt - The Host has detected that the User Interface thread has not responded within the required timeframe (i.e. the UI is considered locked up)	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host Supervisor
1014	Fault	Fault - 1014 Call Field Service	SoftwareErrorFlt The system has detected a software error.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power
1015	Fault	Fault - 1015 Call Field Service	UnknownSupervisorMsgFlt The Host has received a message from the Supervisor that it doesn't recognize (this is a specific type of software error)	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host Supervisor
1016	Fault	Fault - 1016 Call Field Service	ApplicationFontsFailureFlt The Host application's display fonts can not be loaded.	<ul style="list-style-type: none"> Application Software - Reinstall
1017	Fault	Fault - 1017 Call Field Service	AudioPlaybackFlt A failure has occurred during the playback of an audio file.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host
1018	Fault	Fault - 1018 Call Field Service	The Main Application failed to communicate with the Host Controller.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host
1019	Fault	Fault - 1019 Call Field Service	The Host Controller failed to communicate with the Main Application.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host
1020	Fault	Fault - 1020 Call Field Service	The Main Application detected an invalid configuration for the host or submodules.	<ul style="list-style-type: none"> Isolated occurrence - Cycle power Host
1021	Fault	Fault - 1021 Call Field Service	Fault intentionally generated by the Host to test the fault recovery functionality. Used for user training purposes.	<ul style="list-style-type: none"> N/A
1022	Fault	Fault - 1022 Call Field Service	Fault intentionally generated by the Host to demonstrate the system behavior when an unrecoverable fault is triggered. Used for user training purposes.	<ul style="list-style-type: none"> N/A
1107	Error	Unable to load one or more language packs.	InvalidLanguageLoadAttemptErr An error occurred while attempting to load a non-English language.	<ul style="list-style-type: none"> Verify correct version of Language Translation Tool is being used.
1108	Error	Incompatible version numbers within the Fluidics submodule. Fluidics functions will be disabled.	IncompatibleVersionFluidicsErr - The Fluidics module was shut down due to an incompatible version. The log file shows exactly what version information was incompatible.	<ul style="list-style-type: none"> Software corruption or incompatibility Fluidics Controller PCB
1109	Error	Incompatible version numbers within the Pneumatics submodule. Pneumatics functions will be disabled.	IncompatibleVersionPneumaticsErr The Pneumatics module was shut down due to an incompatible version. The log file shows exactly what version information was incompatible.	<ul style="list-style-type: none"> Software corruption or incompatibility Pneumatics Controller PCB
1110	Error	Incompatible version numbers within the Ultrasound submodule. Ultrasound and Diathermy functions will be disabled.	IncompatibleVersionUltrasoundErr The Ultrasound module was shut down due to an incompatible version. The log file shows exactly what version information was incompatible.	<ul style="list-style-type: none"> Software corruption or incompatibility U/S Controller PCB

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1111	Error	Incompatible version numbers within the Auxiliary Illuminator submodule. Auxiliary Illuminator functions will be disabled.	IncompatibleVersionAuxIllumErr The Auxiliary Illuminator module was shut down due to an incompatible version. The log file shows exactly what version information was incompatible.	<ul style="list-style-type: none"> Software corruption or incompatibility Aux Controller PCB
1112	Error	Incompatible version numbers within the Laser submodule. Laser functions will be disabled.	IncompatibleVersionLaserErr The Laser module was shut down due to an incompatible version. The log file shows exactly what version information was incompatible.	<ul style="list-style-type: none"> Software corruption or incompatibility Laser Controller PCB
1200	Advisory	Function is not allowed when the fluidics subsystem is not functional.	CommandNotAllowedFluidicsNotFunctionalAdv The user tried to select Fluidics function which is only allowed when the fluidics subsystem is functional.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1202	Advisory	Function is not allowed when the Laser is in Ready Mode or firing.	CommandNotAllowedWhenLaserReadyOrFiringAdv The user tried to invoke a command which is not allowed when the laser is in Ready Mode or Firing.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1203	Advisory	Function is not allowed when the footswitch treadle is down or buttons are pressed.	CommandNotAllowedWhenTreadleDownAdv The user tried to invoke a command which is only allowed when the treadle is up and no buttons pressed.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1204	Advisory	Flow mode is not available until the probe or handpiece has been primed.	ExtrFlowModeUnavailProbeHpNotPrimedAdv Flow mode is unavailable because a probe or handpiece hasn't been primed.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1205	Advisory	Flow mode is only available for 20 gauge probes / handpieces.	ExtrFlowModeUnavailProbeHpNot20GaugeAdv Flow mode is unavailable because a non 20 gauge probe or handpiece is used.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1207	Advisory	Please connect a Phaco handpiece.	NoPhacoHpConnectedAdv The user presses the treadle in a Phaco Step when no Phaco handpiece is connected.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1208	Advisory	Please tune the Phaco handpiece.	PhacoHpNotTunedAdv The user presses the treadle in a Phaco Step when the Phaco handpiece isn't tuned.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1209	Advisory	Please connect a Frag handpiece.	NoFragHpConnectedAdv The user presses the treadle in a Frag Step when no Frag handpiece is connected.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1210	Advisory	Please tune the Frag handpiece.	FragHpNotTunedAdv The user presses the treadle in a Phaco Step when the Phaco handpiece isn't tuned.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1211	Advisory	Function is not allowed when the Ultrasound submodule is not functional.	CommandNotAllowedUltrasoundNotFunctionalAdv The user tried to invoke a command which is only allowed when the ultrasound subsystem is functional.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1212	Advisory	Function is not allowed when the cassette is not ready.	CommandNotAllowedCassetteNotReadyAdvThe user tried to invoke a command which is only allowed when the cassette is ready.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1213	Advisory	Infusion must be on to use VFC Extract. Press [Ignore] to allow VFC Extract without infusion for this case.	InfusionNeededInVfcExtractAdv The user presses the treadle in a VFC Extract Step when infusion is off.	• User Advisory - See Discrepancy description
1214	Advisory	System hasn't detected VFC. If already connected, press "Connected" button.	NoVfcSyringeConnectedAdv The user presses the treadle in a VFC Step when no VFC Syringe is connected.	• User Advisory - See Discrepancy description
1215	Advisory	System hasn't detected Forceps. If already connected, press "Connected" button.	NoForcepsConnectedAdv The user presses the treadle in a Forceps Step when no forceps are connected.	• User Advisory - See Discrepancy description
1216	Advisory	System hasn't detected Scissors. If already connected, press "Connected" button.	NoScissorsConnectedAdv The user presses the treadle in a Scissors Step when no Scissors are connected.	• User Advisory - See Discrepancy description
1217	Advisory	Please connect an AGF syringe.	NoAgfSyrinceConnectedAdv - The user presses the "Start" button in the Auto Gas Filling dialog when no AGF syringe has been connected.	• User Advisory - See Discrepancy description
1218	Advisory	Forceps not available during AGF: please try again when AGF is complete.	ForcepsNotAvailableDuringAgfAdv The user presses the treadle in a Forceps Step while Auto Gas Filling is in progress.	• User Advisory - See Discrepancy description
1219	Advisory	VFC not available during AGF: please try again when AGF is complete.	VfcNotAvailableDuringAgfAdv The user presses the treadle in a VFC Step while Auto Gas Filling is in progress.	• User Advisory - See Discrepancy description
1220	Advisory	Ejecting the cassette is not allowed while the footswitch treadle is pressed.	CassetteEjectRejectedTreadleDownAdv The user attempts to eject the cassette while the treadle is down.	• User Advisory - See Discrepancy description
1221	Advisory	Ejecting the cassette is not allowed while infusion or FAX is on.	CassetteEjectRejectedInfOnAdv The user attempts to eject the cassette while infusion is on.	• User Advisory - See Discrepancy description
1222	Advisory	Ejecting the cassette is not allowed while irrigation is on.	CassetteEjectRejectedIrrOnAdv The user attempts to eject the cassette while irrigation is on.	• User Advisory - See Discrepancy description
1223	Advisory	Ejecting the cassette is not allowed while priming, tuning, or testing.	CassetteEjectRejectedTestInProgrAdv The user attempts to eject the cassette while tests (priming/tuning/testing) are in progress.	• User Advisory - See Discrepancy description
1224	Advisory	Cleaning the cassette is not allowed while infusion, irrigation, or FAX is on.	CassetteCleanNotAllowedWhenInfOrIrrIsOnAdv The user attempts to start Cassette Cleaning when either Infusion, Irrigation or FAX is on.	• User Advisory - See Discrepancy description
1225	Advisory	Cleaning the cassette is not allowed without a functional cassette.	CassetteCleanNotAllowedCassetteNotAvailableAdv The user attempts to start Cassette Cleaning when the Cassette isn't available (e.g. not inserted).	• User Advisory - See Discrepancy description
1226	Advisory	Priming the cassette is not allowed without a functional cassette.	User attempt to prime the cassette when preconditions aren't met (e.g. no cassette inserted, cassette not tested or didn't pass the test)	• User Advisory - See Discrepancy description
1227	Advisory	An error occurred loading the device settings. The system will revert to default values.	LoadDeviceSettingsFailureAdv A database attempt to load the device settings from the file system has failed. Reverting to defaults.	• User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1228	Advisory	Command is not allowed while infusion is on.	CommandNotAllowedInfusionIsOnAdv The user tried to invoke a command which is only allowed when infusion is not on.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1229	Advisory	Command is not allowed while irrigation is on.	CommandNotAllowedIrrigationIsOnAdv The user tried to invoke a command which is only allowed when irrigation is not on.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1230	Advisory	The selected step is not supported with the current cassette type.	IncompatibleOperatingModeAdv The user attempts to select a Step whose mode/submode isn't compatible with the current operating mode.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1231	Advisory	The connected probe is not supported with the current cassette type.	VitProbeNotCompatibleAdv The user connects a probe (with RFID) that's not compatible with the current operating mode (e.g. an Ultra Vit probe when an Anterior cassette is connected or Ultra Vit Anterior probe when a Posterior cassette is connected)	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1232	Advisory	Please connect footswitch.	NoFootswitchAdv The Supervisor has reported that no footswitch is connected.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1233	Advisory	The connected footswitch is not supported.	UnknownFootswitchAdv The Supervisor has detected the connection of an unknown footswitch.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1234	Advisory	Flow limit is currently not available due to flow mode being unavailable.	ExtrVacModeFlowLimitUnavailableAdv Vacuum mode flow limit depends on the availability of flow mode. If flow mode becomes unavailable then the flow limit function can not be performed by the fluidics submodule.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1236	Advisory	Gravity pressure mode is currently not available.	GravityBasedPressureUnavailableAdv User attempts to select Gravity as the infusion source when a Premium Cassette is inserted.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1237	Advisory	IOP Control is currently not available.	IopCompensationUnavailableAdv User attempts to turn IOP Control on when it's not available.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1238	Advisory	An error occurred saving the device settings.	SaveDeviceSettingsFailureAdv User attempt to save device settings fails.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1239	Advisory	Proportional reflux mode is currently not available.	PropRefluxModeUnavailFluidLvNotInRangeAdv Displayed in one of the following situations: 1. User attempts to toggle into proportional reflux mode when the fluid level in the cassette chamber is out of range or the fluid 2. Fluid level gets out of range while in proportional reflux. 3. Treadle is depressed while in proportional reflux and the fluid level is out of range	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1240	Advisory	Extraction flow mode is currently not available.	ExtrFlowModeUnavailFluidLvNotInRangeAdv The fluid level in the cassette chamber is out of range and the treadle is depressed.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1241	Advisory	Infusion source is getting low: please check the fluid container.	InfContainerNearEmptyAdv The infusion container fluid level is getting low.	• User Advisory - See Discrepancy description
1242	Advisory	Command is not allowed due to instrument not being available.	Command is not allowed due to instrument not being available.	• User Advisory - See Discrepancy description
1243	Advisory	Infusion / Irrigation source is empty: please press [Change] and replace the fluid container.	InfContainerOnReserveAdv The infusion fluid container is empty but there's still fluid in the cassette chambers.	• User Advisory - See Discrepancy description
1244	Advisory	Command is not allowed while priming, tuning, or testing.	CommandNotAllowedWhenTestInProgressAdv The user attempts to do something, e.g. change Steps, that's not allowed when tests are in progress.	• User Advisory - See Discrepancy description
1245	Advisory	Please connect handpiece.	NoHpConnectedAdv The user attempts to perform an action, e.g. priming, that requires a handpiece but no handpiece is connected. Note: This is only applicable to handpieces the system can detect connection for (e.g. Phaco)	• User Advisory - See Discrepancy description
1247	Advisory	Connected handpiece is not supported with the current cassette type.	HpNotCompatibleWithOperatingModeAdv User connects a handpiece that's not compatible with the current Cassette type. (e.g., a Frag handpiece is connected when an Anterior Cassette is inserted)	• User Advisory - See Discrepancy description
1248	Advisory	Is the inserted cassette new?	IsInsertedCassetteNewAdv The user has inserted a Cassette which the system can't determine whether it's new or the same Cassette that was previously ejected.	• User Advisory - See Discrepancy description
1249	Advisory	An error occurred parsing the log file.	LogFileParseFailureAdv An error occurred parsing one of more lines of the log file.	• User Advisory - See Discrepancy description
1250	Advisory	Multi-Cut is not available when proportional scissors are selected. Press [Multi-Cut] to indicate that multi-cut scissors are currently connected.	ScissorsMultiCutUnavailWhenPropScissSelAdv The user has selected scissors of type Proportional and attempts to select the Multi-Cut submode or attempt to use momentary cutting in Extrusion Mode. The advisory lets the user change both the Scissors type and the Scissors submode.	• User Advisory - See Discrepancy description
1251	Advisory	Command is not allowed while the cassette is being cleaned.	The user tried to turn Infusion, Irrigation or FAX on while the cassette is being cleaned.	• User Advisory - See Discrepancy description
1252	Advisory	The scanned barcode is not recognized.	UnknownBarcodeScannedAdv The user has scanned an item that the system doesn't recognize.	• User Advisory - See Discrepancy description
1255	Advisory	Illuminator fiber is not connected.	NoIlluminatorConnectedAdv User has attempted to turn on an illuminator with no illuminator fiber connected.	<ul style="list-style-type: none"> • Probe not fully inserted • Fiber Detection Cable mounting screw too Short • Fiber Detection Cable assembly • RFID PCB

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1256	Advisory	Proportional reflux mode is not available when the footswitch treadle is depressed.	PropRefluxUnavailableTreadleDownAdv User attempts to enter Proportional Reflux mode when the treadle is down	• User Advisory - See Discrepancy description
1257	Advisory	The report's header or footer has too many rows to fit on the page.	ReportExcessiveHeaderFooterSizeAdv The user has added too many rows to a header or footer table being edited in an End Case report. As a result, the table will not be printed out in its entirety on the various pages comprising the report.	• User Advisory - See Discrepancy description
1258	Advisory	The report's current table has too many rows to fit on the page.	ReportExcessiveTableSizeAdv The user has added too many rows to the current table being edited in an End Case report. As a result, the table will not be printed out in its entirety on the various pages comprising the report.	• User Advisory - See Discrepancy description
1259	Advisory	Command is not allowed while proportional diathermy is active.	CommandNotAllowedInProportionalDiathermyAdv The user attempts to enter proportional reflux while proportional diathermy is active.	• User Advisory - See Discrepancy description
1260	Advisory	Command is not allowed while proportional reflux is active.	CommandNotAllowedInProportionalRefluxAdv The user attempts to enter proportional diathermy while proportional reflux is active.	• User Advisory - See Discrepancy description
1261	Advisory	Cassette can't be ejected while being cleaned.	CassetteEjectRejectedCassettsCleaningAdv The user attempts to eject the cassette while it's being cleaned.	• User Advisory - See Discrepancy description
1263	Advisory	Port can't be selected: there is no probe connected.	LsrActivePortSelRejectedNoProbeConnAdv The user tries to make a laser port the active port but there's no probe connected to that port.	• User Advisory - See Discrepancy description
1264	Advisory	Port can't be selected: the probe type for the port isn't valid.	LsrActivePortSelRejectedNoValidProbeSelAdv The user tries to make a laser port the active port but the currently selected probe type for that port is invalid.	• User Advisory - See Discrepancy description
1266	Advisory	A laser probe is not connected to the active port.	LsrNoProbeConnAdv Shown in any of the following situations: · Laser Step entered and no probe connected to the active port · Probe removed from active port · User tries to go to Ready Mode when no probe is connected to the active port	• User Advisory - See Discrepancy description
1267	Advisory	A valid laser probe is not selected for the active port.	LsrNoValidProbeSelAdv Shown in any of the following situations: · Laser Step entered and no valid probe type selected for the active port · User tries to go to Ready Mode when no valid probe type is selected for the active port	• User Advisory - See Discrepancy description
1268	Advisory	The laser remote interlock is open.	LsrInterlockOpenAdv Shown in any of the following situations: · Laser Step entered and the Interlock is open · Interlock opened in a Laser Step · User tries to go to Ready Mode when the Interlock is open	• User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1269	Advisory	Laser Dr. Filters are not connected to the console. Are all necessary Dr. Filters properly installed and connected?	LsrDoctorFilterUnverified0ConnAdv Shown in any of the following situations: Laser Step entered and the Dr. Filters haven't been verified for the active port · Endo Probe inserted to the active port while in a Laser Step. User tries to go to Ready Mode when Dr. Filters haven't been verified for the active port.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1270	Advisory	One Laser Dr. Filter is connected to the console. Are all necessary Dr. Filters properly installed and connected?	LsrDoctorFilterUnverified1ConnAdv Same as above	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1271	Advisory	Two Laser Dr. Filters are connected to the console. Are all necessary Dr. Filters properly installed and connected?	LsrDoctorFilterUnverified2ConnAdv Same as above	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1273	Advisory	Laser Dr. Filter 1 is disengaged	LsrDoctorFilter1DisengagedAdv The user has disengaged the (connected) Dr. Filter 1 while in a Laser Step.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1275	Advisory	Laser Dr. Filter 2 is disengaged	LsrDoctorFilter2DisengagedAdv Same as 1273 but for Dr. Filter 2	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1276	Advisory	Command is not allowed when Laser is firing.	LsrCommandNotAllowedWhenFiringAdv User has attempted to change one of the laser's settings while the laser is firing.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1277	Advisory	Port can't be selected: it's not functional.	LsrActivePortSelRejectedPortFailureAdv User has attempted to select a laser port that's not functional.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1278	Advisory	Cannot go to Laser Ready Mode while the current screen is being displayed.	LsrReadyModeRejectedScreenActiveAdv User has pressed the Ready button from the footswitch when a "conflicting screen" is active.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1279	Advisory	No laser footswitch is connected.	LsrNoFootswitchConnectedAdv User enters a Laser Step when no laser footswitch is connected or the laser footswitch is disconnected in a Laser Step.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1280	Advisory	Unable to write to the report file.	ReportFileWriteErrorAdv A problem has occurred when trying to write to the specified Report file.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1281	Advisory	Unable to read from the report file.	ReportFileReadErrorAdv A problem has occurred when trying to read from the specified Report file.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1285	Advisory	The report file and its associated CRC value do not match.	ReportFileCrcMismatchErrorAdv The Report file and its associated CRC value do not match.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1288	Advisory	Can't eject the cassette while reflux is active.	CassetteEjectRejectedRefluxInUseAdv The user attempts to eject the cassette while reflux (of any type) is active. For proportional reflux, this advisory is displayed when the user attempts cassette ejection while proportional reflux mode is active with the treadle not depressed. Cassette ejection while the treadle is depressed will generate advisory 1220.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1289	Advisory	Extraction flow mode is not available when FAX is turned on.	ExtrFlowModeUnavailFaxInUseAdv FAX was turned on while in Flow Mode or a Posterior Step with Flow Mode preference was selected when FAX was on.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1290	Advisory	The surgical function is currently unavailable.	SurgicalFunctionProxyUnavailableAdv The user has requested surgical functionality that is currently unavailable. This is a default advisory that is only displayed for cases in which a more meaningful explanation is not available.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1292	Advisory	An error occurred accessing the video recorder. Please verify it is on and connected.	VideoRecorderNotCommunicatingAdv An error occurred accessing the video recorder.	<ul style="list-style-type: none"> Check connection to Video Recorder.
1296	Advisory	The barcode reader failed to initialize.	BarcodeReaderInitFailureAdv The bar code reader failed to initialize during startup.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1297	Advisory	The system is currently low on free disk space. Please backup or remove non-critical files.	LowFreeSpace During startup, free space was detected at less than the desired minimum %.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1298	Advisory	A printer must be configured in System Settings before printing.	PrinterNotConfiguredAdv The user tried to print but has not configured the printer in system settings	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1299	Advisory	The current printer configuration could not be saved.	DefaultPrintSettingsErrorAdv An error occurred attempting to save the default printer with the current configuration	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1302	Advisory	An unknown error occurred while printing.	PrinterGeneralErrorAdv Generated by any printer error other the errors above.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1303	Advisory	The Illuminators are currently turned off from the footswitch and cannot be turned on or off at this time.	IlluminatorMasterSwitchOffAdv The user has attempted to turn on or off an endo illuminator when the footswitch Momentary Endo Illuminators Off function is active.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1304	Advisory	The Laser is currently unable to deliver the maximum power level of 2 Watts. The maximum Laser power (Watts) currently available is:	LsrMaxPowerAvailableAdv Is generated when the power available from the laser drops below the maximum level (2 Watts).	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1305	Advisory	An error occurred loading a surgeon. The system will revert to default values.	LoadSurgeonFailureAdv A database attempt to load a surgeon from the file system has failed. Reverting to defaults.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1306	Advisory	An error occurred setting the printer port. The system will revert to the previous value.	PrinterPortConfigErrorAdv Attempt to set the printer IP address failed.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1307	Advisory	An error occurred loading a procedure. The system will revert to default values.	LoadProcedureFailureAdv A database attempt to load a procedure from the file system has failed. Reverting to defaults.	• User Advisory - See Discrepancy description
1308	Advisory	An error occurred loading the system settings. The system will revert to default values.	LoadSystemSettingsFailureAdv A database attempt to load the system settings from the file system has failed. Reverting to defaults.	• User Advisory - See Discrepancy description
1309	Advisory	An error occurred saving a surgeon's settings. Changes will be reverted at the start of the next case.	SaveSurgeonFailureAdv A database attempt to save a surgeon to the file system has failed.	• User Advisory - See Discrepancy description
1310	Advisory	An error occurred saving a procedure. Changes will be reverted at the start of the next case.	SaveProcedureFailure A database attempt to save a procedure from the file system has failed. Reverting to defaults.	• User Advisory - See Discrepancy description
1311	Advisory	An error occurred saving the system settings. The system will use default values.	SaveSystemSettingsFailureAdv A database attempt to save the system settings from the file system has failed. Reverting to defaults.	• User Advisory - See Discrepancy description
1312	Advisory	An error has occurred initializing Video Overlay. Video Overlay functions will be disabled.	VideoOverlayInitializationErrorAdv An error happened during VideoOverlay initialization.	• User Advisory - See Discrepancy description
1313	Advisory	An error has occurred in the Video Overlay component. Video Overlay functions will be disabled.	VideoOverlayErrorAdv An error happened during VideoOverlay processing.	• User Advisory - See Discrepancy description
1314	Advisory	There was an error saving surgeon data.	VcdSaveSurgeonAdv There was an error saving surgeon data.	• User Advisory - See Discrepancy description
1317	Advisory	There was an error renaming the surgeon.	VcdRenameSurgeonAdv There was an error renaming the surgeon.	• User Advisory - See Discrepancy description
1318	Advisory	There was an error renaming the procedure.	VcdRenameProcedureAdv There was an error renaming the procedure.	• User Advisory - See Discrepancy description
1319	Advisory	There was an error renaming the case data.	VcdRenameCaseAdv There was an error renaming the case data.	• User Advisory - See Discrepancy description
1320	Advisory	There was an error deleting the surgeon.	VcdDeleteSurgeonAdv There was an error deleting the surgeon.	• User Advisory - See Discrepancy description
1321	Advisory	There was an error deleting the procedure	VcdDeleteProcedureAdv There was an error deleting the procedure	• User Advisory - See Discrepancy description
1322	Advisory	There was an error deleting the case data.	VcdDeleteCaseAdv There was an error deleting the case data	• User Advisory - See Discrepancy description
1323	Advisory	There was an error loading the surgeon.	VcdLoadSurgeonAdv There was an error loading the surgeon.	• User Advisory - See Discrepancy description
1325	Advisory	There was an error loading the case data.	VcdLoadCaseAdv There was an error loading the case data.	• User Advisory - See Discrepancy description
1326	Advisory	Unable to load the case report template.	VcdLoadCaseReportTemplateAdv There was an error loading the Case Report Template.	• User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1329	Advisory	Unable to save the technician's log.	VcdSaveTechniciansLogAdv There was an error saving the Technicians Log.	• User Advisory - See Discrepancy description
1330	Advisory	Unable to load the video table.	VideoInfoTableReadFailureAdv There was an error loading the Video Table.	• User Advisory - See Discrepancy description
1331	Advisory	Unable to play the video.	VideoDfuFailureAdv There was an error loading and/or playing the Video file.	• User Advisory - See Discrepancy description
1332	Advisory	Unable to load Help.	HelpFileReadFailureAdv There was an error opening the Help pdf file.	• User Advisory - See Discrepancy description
1333	Advisory	Unable to save the case info.	SaveCaseInfoFailureAdv There was an error saving the Case Info file.	• User Advisory - See Discrepancy description
1334	Advisory	Unable to update the log file.	LogFileWriteFailureAdv There was an error writing to the Log File.	• User Advisory - See Discrepancy description
1335	Advisory	Unable to read the log file.	LogFileReadFailureAdv There was an error reading from the Log File.	• User Advisory - See Discrepancy description
1336	Advisory	Unable to write the incident file.	IncidentFileWriteFailureAdv There was an error writing to the Incident File.	• User Advisory - See Discrepancy description
1337	Advisory	Unable to read the incident file.	IncidentFileReadFailureAdv There was an error reading from the Incident File.	• User Advisory - See Discrepancy description
1338	Advisory	Unable to write the system metrics file.	SystemMetricFileWriteFailureAdv There was an error writing to the System Metrics File.	• User Advisory - See Discrepancy description
1339	Advisory	Unable to read the system metrics file.	SystemMetricFileReadFailureAdv There was an error reading from the System Metrics File.	• User Advisory - See Discrepancy description
1340	Advisory	Unable to write to the removable drive.	ErrorAccessingRemovableDriveAdv There was an error while attempting to write to the removable drive.	• User Advisory - See Discrepancy description
1341	Advisory	Further increasing the output level in air can damage fiber tips. Would you like to continue?	IllumSafeThreshold1ExceededAdv The user has exceeded Threshold 1 illuminator value by either turning on the illuminator, changing the setpoint while the illuminator is on, or changing Procedures while the illuminator is on.	• User Advisory - See Discrepancy description
1342	Advisory	Further increasing the output level will reduce exposure time by 35%. Would you like to continue?	IllumSafeThreshold2ExceededAdv The user has exceeded Threshold 2 illuminator value by either turning on the illuminator, changing the setpoint, or changing Procedures.	• User Advisory - See Discrepancy description
1343	Advisory	Further increasing the output level in air can damage fiber tips. Also, further increasing the output level will reduce exposure time by 35%. Would you like to continue?	IllumSafeThreshold1And2ExceededAdv The user has exceeded both Threshold 1 and Threshold 2 illuminator value by either turning on the illuminator, changing the setpoint while the illuminator is on, or changing Procedures while the illuminator is on.	• User Advisory - See Discrepancy description
1344	Advisory	Only two illuminators can be turned on simultaneously.	IllumMaxTwoIlluminatorsTurnedOnAdv User attempts to turn on an illuminator port when two ports are already on. This is not allowed.	• User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1345	Advisory	AGF not allowed while Forceps or VFC is in use.	AgfNotAllowedForcepsOrVfcInUseAdv User attempts to start Auto Gas Filling when either Forceps or VFC is in use (i.e. selected and treadle down).	• User Advisory - See Discrepancy description
1346	Advisory	An error occurred trying to access the wireless network.	WirelessNetworkAccessAdv An error occurs when the user attempts to access the wireless network.	• User Advisory - See Discrepancy description
1349	Advisory	A RAID hard drive has failed or is missing	RaidDriveFailedOrMissingAdv One Disk in a redundant RAID volume is missing or has failed but the volume is still functional.	• User Advisory - See Discrepancy description
1350	Advisory	The probe in the current laser port is not supported.	LsrReadyModeRejectedInvalidProbeTypeAdv The type of probe in the current port is not supported by CONSTELLATION* VISION SYSTEM EH1 but might be supported by PurePoint* Laser (slit lamp for example).	• User Advisory - See Discrepancy description
1355	Advisory	Command is not allowed when the Pneumatics submodule is not functional.	CommandNotAllowedPneumaticsNotFunctionalAdv The user tried to invoke a command which is only allowed when the Pneumatics subsystem is functional.	• User Advisory - See Discrepancy description
1356	Advisory	Command is not allowed when an Anterior Only Cassette is being used.	CommandNotAllowedWithAnteriorOnlyCassetteAdv The user tried to invoke a command which is not allowed with an Anterior Only Cassette.	• User Advisory - See Discrepancy description
1357	Advisory	Cannot switch to Infusion: the cassette has not been primed.	CantSwitchToInfusionCassetteNotPrimedAdv The user tried to switch to Infusion when the cassette was not primed.	• User Advisory - See Discrepancy description
1358	Advisory	Current probe type is unrecognized. Please select a valid probe type.	IllumTurnOnRejectedUnrecognizedTypeAdv User has attempted to turn on an illuminator when the probe type is "unrecognized"	• User Advisory - See Discrepancy description
1359	Advisory	Power module communication error. When powering down the system, you will have to press the "Options/Shutdown" button on the screen.	PowerModuleCommFailureAdv Host controller failed to communicate with power module.	• User Advisory - See Discrepancy description
1361	Advisory	Command is not allowed when Infusion backup pressure is active.	The user tried to invoke a command which is only allowed when Infusion backup pressure is not active.	• User Advisory - See Discrepancy description
1362	Advisory	Command is not allowed when the probe type has been identified by RFID.	The user tried to change the type of a laser probe that has been identified by RFID.	• User Advisory - See Discrepancy description
1363	Advisory	Command is not allowed when the probe type has been previously identified by the user. Disconnect and then reconnect the probe to change its type.	The user tried to change the type of a laser probe that has been identified by a user selection. Only one selection is allowed after connection.	• User Advisory - See Discrepancy description
1364	Advisory	IOP Control is not allowed without a premium cassette inserted. Please insert a premium cassette and retry.	IopNotAllowedWhenUsingNonPremiumCassetteAdv The user tried to turn on IOP Control when a premium cassette is not inserted.	• User Advisory - See Discrepancy description
1365	Advisory	IOP Control is not allowed with an uncalibrated cassette. Please calibrate cassette and retry.	IopNotAllowedWhenCassetteNotCalibratedAdv The user tried to turn on IOP Control with a cassette that has not been calibrated.	• User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1366	Advisory	Command is not allowed when FAX is on and the cassette has not been primed.	The user tried to perform a Test Instrument command when FAX is on and the cassette is not primed.	• User Advisory - See Discrepancy description
1367	Advisory	FAX is not allowed when the cassette is being primed.	FaxNotAllowedWhenCassettelsPrimingAdv The user tried to turn on FAX when the cassette is being primed.	• User Advisory - See Discrepancy description
1369	Advisory	Setting values is not allowed when the cassette is in the chamber overflow condition.	CommandNotAllowedDuringChamberOverflowAdv The cassette chamber is in an overflow condition and pressure cannot be controlled.	• User Advisory - See Discrepancy description
1370	Advisory	Test instrument is not allowed in this mode.	TestInstrumentNotAllowedInThisModeAdv User has attempted to perform a test instrument command in Setup or End Case.	• User Advisory - See Discrepancy description
1371	Advisory	Update is only available from End Case.	UpdateOnlyAvailableInEndCaseAdv User has attempted to perform a update command in Setup or Surgery.	• User Advisory - See Discrepancy description
1372	Advisory	Cleaning the cassette is not allowed when the inlet pressure is out of range. Please adjust the inlet pressure between 58 psi and 120 psi.	CassetteCleanNotAllowedAirPressureOutOfRange The user attempts to start Cassette Cleaning when the Air source (wall pressure) is either below 58 psi or above 120 psi.	• User Advisory - See Discrepancy description
1751	Information	The remote control battery is low.	RemoteControlBatteryLow User has pressed on a remote control button and the remote's battery is running out of power	• User Advisory - See Discrepancy description
1752	Information	Infusion pressure will drop to zero during calibration. Continue?	CalibrationBringsInfusionToZeroInfo User has pressed the "Calibrate" button on the advisory popup brought up when there's been an IV Pole error. Since I/V Pole calibration will change the current Infusion pressure, the user is warned before calibration is started.	• User Advisory - See Discrepancy description
1753	Information	Power recovery in progress. Please wait until surgical functionality becomes available.	PowerRecoveryInProgressInfo AC power has been restored and the recovery process has started.	• User Advisory - See Discrepancy description
1373	Advisory	The Default Doctor can not be modified.	CommandNotAllowedDefaultDoctorAdv The user attempts to save, modify or add a procedure when the default doctor is selected.	• User Advisory - See Discrepancy description
1374	Advisory	The Accurus® Classic procedure can not be modified.	CommandNotAllowedAccurusClassicAdv The user attempts to modify an Accurus Classic procedure.	• User Advisory - See Discrepancy description
1375	Advisory	This command is not available in End Case.	CommandNotAllowedInEndCaseAdv The user attempts to change either the doctor or procedure in End Case.	• User Advisory - See Discrepancy description
1376	Advisory	This command is not available when the laser is firing.	CommandNotAllowedLaserFiringAdv The user attempt to reset the shot count and energy metrics when the Laser is firing.	• User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1377	Advisory	No changes have been made to the current procedure.	CommandNotAllowedNoProcChanges The user attempts to save a Procedure when no procedure changes have been made.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1378	Advisory	This command is not available when system is in the surgery screen.	CommandNotAllowedInSurgeryMode The command is not available when system is in the Surgery screen.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1379	Advisory	Connected vitreous probe is not valid. The probe will be used as a low-speed probe.	VitProbeInvalidAdv A connected vitreous probe has valid checksum but one or more invalid parameters.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1380	Advisory	The CPU battery is bad. Please contact Field Service.	CPUBatteryBadAdv	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1381	Advisory	Unable to copy to the removable drive.	RemovableDriveCopyErrorAdv	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1382	Advisory	Unable to delete from the removable drive.	RemovableDriveDeleteErrorAdv	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1383	Advisory	Command is not allowed when the inlet pressure is out of range. Please adjust the inlet pressure between 58 psi and 120 psi.	CommandNotAllowedAirPressureOutOfRange The user tried to invoke a command when the Air source (wall pressure) is either below 58 psi or above 120 psi.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1384	Advisory	Ensure proper scissors tip attachment to pneumatic handpiece. Prior to use in the eye, depress foot pedal/button to ensure proper tip function.	TestScissorsTipAttachmentAdv User has chosen to use scissors and is reminded to confirm attachment and functionality before use.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1385	Advisory	Ensure proper forceps tip attachment to pneumatic handpiece. Prior to use in the eye, depress foot pedal to ensure proper tip function.	TestForcepsTipAttachmentAdv User has chosen to use forceps and is reminded to confirm attachment and functionality before use.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1386	Advisory	Fluidics submodule recovery unsuccessful. Fluidics functions will remain disabled.	Fluidics submodule recovery unsuccessful. Fluidics functions will remain disabled.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1387	Advisory	US Diathermy submodule recovery unsuccessful. US Diathermy functions will remain disabled.	US Diathermy submodule recovery unsuccessful. US Diathermy functions will remain disabled.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1388	Advisory	TableTop Illuminator submodule recovery unsuccessful. TableTop Illuminator functions will remain disabled.	Displayed after the Table Top Illuminator submodule has unsuccessfully recovered from an error.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1389	Advisory	Pneumatics submodule recovery unsuccessful. Pneumatics functions will remain disabled.	Displayed after the Pneumatics submodule has unsuccessfully recovered from an error.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1390	Advisory	Auxiliary Illuminator submodule recovery unsuccessful. Auxiliary Illuminator functions will remain disabled.	Displayed after the Auxiliary Illuminator submodule has unsuccessfully recovered from an error.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1391	Advisory	Laser submodule recovery unsuccessful. Laser functions will remain disabled.	LaserSubmoduleErrorRecoveryUnsuccessfulAdv Displayed after the Laser submodule has unsuccessfully recovered from an error.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1392	Advisory	Command not allowed without a calibrated AutoSert* handpiece.	IoICmdNotAllowedHandpieceNotReadyAdv The user pressed the treadle in an AutoSert* Step when no AutoSert* handpiece was connected or the handpiece was connected but not calibrated.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1394	Advisory	The AutoSert* handpiece is already prepared. The command is not allowed.	IoICmdNotAllowedHandpiecePreparedAdv User pressed the "Load Plunger" or "Preload IOL" button when the AutoSert* handpiece was "Prepared"	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1395	Advisory	The current AutoSert* operation was cancelled.	IoICmdCancelledEnteringEndCaseAdv User selected End Case state when one of the following AutoSert* setup commands were in progress: <ul style="list-style-type: none"> Load Plunger Preload IOL 	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1396	Advisory	Preload IOL command not allowed until the AutoSert* plunger has been fully retracted.	IoICmdNotAllowedLoadPlungerStartedAdv User pressed the [Preload IOL] button when a Load Plunger command was previously started but not yet completed (and currently paused).	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1397	Advisory	Load Plunger command not allowed until the AutoSert* plunger has been fully retracted.	IoICmdNotAllowedPreloadIoIStartedAdv User pressed the [Load Plunger] button when a Preload IOL command was previously started but not yet completed (and currently paused).	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1399	Advisory	Function is not allowed when the IOL Injection submodule is not functional.	CommandNotAllowedIoIInjectionNotFunctionalAdv The user tried to invoke a command which is only allowed when the IOL Injection subsystem is functional.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1401	Advisory	20 cc of undiluted gas has been dispensed. After removing the syringe from the system, adjust the plunger to obtain the desired gas concentration before injection.	AgfUndilutedGasAdv Warns user that there are 20 cc of undiluted gas in the syringe.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1402	Advisory	Fluidics recovery complete. Cassette status not fully restored.	FluidicsSubmoduleRecoveryPartialSuccessAdv The Fluidics submodule recovered, but the system could not fully restore the state due to missing instruments (no valid cassette reported)	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1403	Advisory	Table Top Illuminator recovery complete. Illuminator probe status not fully restored.	The Table Top Illuminator load module recovered, but the system could not fully restore the state due to missing instruments (illuminator probe(s) not detected)	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
1404	Advisory	Pneumatics recovery complete. Vitreous probe status not fully restored.	PneumaticsSubmoduleRecoveryPartialSuccessAdv The Pneumatics submodule recovered, but the system could not fully restore the state due to missing instruments (vitreous probe not detected)	<ul style="list-style-type: none"> User Advisory - See Discrepancy description

Table 4-4 Host Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
1405	Advisory	Aux Illuminator recovery complete. Illuminator probe status not fully restored.	AuxIllumSubmoduleRecoveryPartialSuccessAdv The Auxiliary Illuminator submodule recovered, but the system could not fully restore the state due to missing instruments (illuminator probe(s) not detected)	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1406	Advisory	Laser recovery complete. Laser probe status not fully restored.	LaserSubmoduleRecoveryPartialSuccessAdv The Laser submodule recovered, but the system could not fully restore the state due to missing instruments (laser probe(s) not detected).	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
1407	Advisory	Fault recovery complete. AutoSert* Handpiece status not fully restored.	IolFunctionalityNotRestoredAfterFaultRecoveryAdv An IOL handpiece was inserted when a Fault occurred. After recovery the system will not restore the handpiece state and the user is notified via this advisory.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description

Table 4-5 Supervisor Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
2100	Fault	Fault - 2100 Call Field Service	SUP_HOST_HEARTBEAT_TIMEOUT – A two second heart beat reply from the host was missed.	<ul style="list-style-type: none"> • Cable W17 • Host Module • Supervisor
2200	Error	Communications failure with the Fluidics submodule. Fluidics functions will be disabled.	SUP_FLUIDICS_HUNT_FAIL_ERR - The supervisor cannot establish communicate with the Fluidics submodule.	<ul style="list-style-type: none"> • Cable W24 • Supervisor • Fluidics Controller PCB
2201	Error	Communications failure with the Fluidics submodule. Fluidics functions will be disabled.	SUP_FLUIDICS_COMM_FAIL_ERR The supervisor lost communicate with the Fluidics submodule	<ul style="list-style-type: none"> • Cable W24 • Supervisor • Fluidics Controller PCB
2202	Advisory	Unable to perform this function without a primed cassette.	SUP_CASSETTE_NOT_READY_ADV - This advisory is produced when extraction is attempted without a primed cassette.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
2203	Advisory	Unable to aspirate. Please turn on infusion.	SUP_INFUSION_IRRIGATION_OFF_ADV - This advisory is produced when extraction is attempted without infusion on.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
2204	Advisory	Unable to aspirate while infusion/irrigation is unavailable.	SUP_INFUSION_UNAVAILABLE_ADV - This advisory is produced when extraction is attempted without infusion being functional.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
2205	Advisory	Please wait: draining cassette.	SUP_EXT_CHMBR_OVER_ADV - This advisory is produced when extraction is attempted when the extraction chamber is in a overflow condition.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
2206	Advisory	Unable to turn on infusion without a primed cassette.	SUP_INF_CASSETTE_NOT_READY_ADV - This advisory is produced when infusion is attempted with out a primed cassette.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
2207	Advisory	Unable to turn on infusion without a calibrated IV pole.	SUP_INF_IV_POLE_NOT_CALIB_ADV - This advisory is produced when infusion is attempted with out a calibrated IV Pole.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
2208	Advisory	Unable to turn on infusion without sufficient source pressure.	SUP_INF_NO_AIR_PRESSURE_ADV - This advisory is produced when infusion is attempted with out source air pressure	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
2209	Advisory	Unable to turn on irrigation without a primed cassette.	SUP_IRR_CASSETTE_NOT_READY_ADV - This advisory is produced when irrigation is attempted with out a primed cassette.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
2211	Advisory	Unable to turn on irrigation without sufficient source pressure.	SUP_IRR_NO_AIR_PRESSURE_ADV - This advisory is produced when irrigation is attempted with out suitable source pressure.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
2212	Advisory	Irrigation unavailable: out of fluid. Please change the bottle.	SUP_IRR_NO_FLUID_ADV - This advisory is produced when irrigation is attempted with out sufficient irrigation fluid available	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
2213	Advisory	FAX unavailable. Please insert a cassette.	SUP_FAX_NO_CASSETTE_ADV - This advisory is produced when FAX is attempted with out a cassette inserted.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description

Table 4-5 Supervisor Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
2214	Error	Extraction setpoint timeout. Infusion/Irrigation and Extraction functions will be disabled.	SUP_EXT_NO_ACTIVE_UPDATE_ERR – This error is produced when the extraction is active and the extraction proxy fails to get a footswitch update within the required timeframe.	<ul style="list-style-type: none"> Supervisor Footswitch Fluidics Controller PCB
2215	Advisory	Micro reflux is currently not available.	SUP_EXT_NO_REFLUX_FLUID_ADV – This error is produced when the user attempts to activate micro reflux and the fluid level is out of range.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
2216	Advisory	Please change the Bottle to regain extraction.	SUP_EXT_NO_INFUSE_FLUID_ADV This error is generated when aspiration is attempted when the infusion in the cassette is empty	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
2217	Advisory	Extraction is not allowed while in 30 mmHg backup mode.	SUP_EXT_INFUSE_IN_BACKUP_ADV This advisory occurs when Extraction is attempted while in manual backup.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
2218	Advisory	Irrigation is not allowed while in 30 mmHg backup mode.	SUP_IRR_INFUSE_IN_BACKUP_ADV This advisory occurs when Irrigation is attempted while in manual backup.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
2250	Error	Communications failure with the Pneumatics submodule. Pneumatics functions will be disabled.	SUP_PNEUMATICS_HUNT_FAIL_ERR – The supervisor cannot communicate with the Pneumatics submodule.	<ul style="list-style-type: none"> Cable W21 Supervisor Pneumatic Controller
2251	Error	Communications failure with the Pneumatics submodule. Pneumatics functions will be disabled.	SUP_PNEUMATICS_COMM_FAIL_ERR – This error is produced when the Supervisor losses communication with the pneumatics module	<ul style="list-style-type: none"> Cable W21 Supervisor Pneumatic Controller
2252	Advisory	Unable to enable function without sufficient source pressure.	SUP_PNEU_NO_AIR_PRESSURE_ADV - This advisory is produced when cutter or utility operation is requested with out sufficient source pressure.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
2253	Advisory	Unable to enable function with excessive source pressure.	SUP_PNEU_HIGH_AIR_PRESSURE_ADV - This advisory is produced when cutter or utility operation is requested with source pressure that is too high.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
2254	Error	Pneumatics setpoint timeout. Pneumatics functions will be disabled.	SUP_PNEU_NO_ACTIVE_UPDATE_ERR - This error is produced when the pneumatics is active and the pneumatics proxy fails to get a footswitch update within the required timeframe.	<ul style="list-style-type: none"> Supervisor Footswitch Pneumatics Controller PCB
2300	Error	Communications failure with the Ultrasound submodule. Ultrasound functions will be disabled.	SUP_ULTRASOUND_HUNT_FAIL_ERR – The supervisor cannot communicate with the Ultrasound submodule.	<ul style="list-style-type: none"> Cable W20 Supervisor U/S Controller PCB
2301	Error	Communications failure with the Ultrasound submodule. Ultrasound functions will be disabled.	SUP_ULTRASOUND_COMM_FAIL_ERR - The supervisor lost communication with the Ultrasound submodule	<ul style="list-style-type: none"> Cable W20 Supervisor U/S Controller PCB
2302	Error	US setpoint timeout. US, IOL injector and Diathermy functions will be disabled.	SUP_US_NO_ACTIVE_UPDATE_ERR - This error is produced when the US is active and the US proxy fails to get a footswitch update within required timeframe.	<ul style="list-style-type: none"> Supervisor Footswitch Fluidics Controller PCB

Table 4-5 Supervisor Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
2350	Error	Communications failure with the Laser submodule. Laser functions will be disabled.	SUP_LASER_HUNT_FAIL_ERR - The supervisor cannot communicate with the Laser submodule.	<ul style="list-style-type: none"> Communication Cable Supervisor Laser Core Module
2351	Advisory	Communications failure with the Laser submodule. Laser functions will be disabled.	SUP_LASER_COMM_FAIL_ADV - The supervisor lost communication with the Laser submodule	<ul style="list-style-type: none"> This message is normally displayed whenever the key is turned off. If displayed any other time check: Communication Cable Supervisor Laser Core Module
2400	Advisory	Please insert the Table Top Illuminator drawer.	SUP_ILLUM_DRAWER_OUT_ADV – Supervisor detected a non –zero setpoint with the Table Top Illuminator drawer out	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
2401	Advisory	The lamp in the Table Top Illuminator needs to be replaced. Please contact Field Service.	SUP_TT_ILLUM_LAMP_BAD_ADV - Supervisor detected a non–zero setpoint with the Table Top Illuminator Lamp bad.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
2500	Advisory	Communications failure with the Power Control submodule. Please contact Field Service.	SUP_POWER_MONITOR_COMM_FAIL_ERR – Supervisor detected a serial I/O error when trying to talk to the Power Module	<ul style="list-style-type: none"> Reset needed for Power Controller - Use PCB reset switch or press and hold in Standby switch to power down W48 Cable Assy Power Controller PCB Supervisor
2550	Error	Footswitch error. Footswitch treadle functions will be disabled.	SUP_FOOTSWITCH_ERR – The footswitch has an error.	<ul style="list-style-type: none"> Footswitch Supervisor Cable W22 Cable W01 (Base Footswitch Cable)
2700	Error	Communications failure with the Auxiliary Illuminator submodule. Auxiliary Illuminator functions will be disabled.	SUP_AUX_ILLUMINATOR_HUNT_FAIL_ERR – The supervisor cannot communicate with the Auxiliary Illuminator submodule.	<ul style="list-style-type: none"> Supervisor Aux illuminator PCB
2701	Advisory	Communications failure with the Auxiliary Illuminator submodule. Auxiliary Illuminator functions will be disabled.	SUP_AUX_ILLUM_COMM_FAIL_ADV - The supervisor lost communication with the Auxiliary Illuminator submodule	<ul style="list-style-type: none"> Supervisor Aux illuminator PCB
2702	Advisory	The lamp in the Auxiliary Illuminator needs to be replaced. Please contact Field Service.	SUP_AUX_ILLUM_LAMP_BAD_ADV - Supervisor detected a non–zero setpoint with the Auxiliary Illuminator Lamp bad.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
2750	Fault	Fault - 2750 Call Field Service	SUP_RESET_FAIL_ERR – The Supervisor could not assert reset control over all submodules. A module that was supposed to be reset responded with its module information.	<ul style="list-style-type: none"> Supervisor Module not responding
2751	Fault	Fault - 2751 Call Field Service	SUP_SLOT_ID_ERR – The Supervisor got duplicate slot ID for the submodules.	<ul style="list-style-type: none"> Supervisor Module not responding

Table 4-6 Fluidics Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
3100	Advisory	Could not calibrate the fluid level sensors. Please eject and reinsert, or replace the cassette.	FLD_CMN_LEVEL_SENSOR_CAL_ERR - Level Sensor calibration failed. Possible reasons: 1) the calibration done status bit was not set by the FPGA within the specified timeout limit or 2) the calculated required max/min pixel gain was outside the valid range or 3) the brightness level of the level sensor LEDs could not be adjusted.	<ul style="list-style-type: none"> • Cassette • Level Sensor • Fluidics Controller PCB • Fluidics Module
3200	Error	Cassette latch error. Infusion/irrigation and extraction functions will be disabled.	CASSETTE_LATCH_ERR - Cassette latch hardware feedback signals indicate a hardware problem.	<ul style="list-style-type: none"> • Cassette • Mechanical interference with latch mechanism • Latch Cylinder • Fluidics Controller PCB • Fluidics Module
3201	Advisory	Invalid cassette ID detected. Please eject and insert a valid cassette.	CASSETTE_ID_INVALID_ERR - An invalid cassette id was read by the cassette id sensors.	<ul style="list-style-type: none"> • Cassette • Cassette ID Sensors • Suction PCB • Fluidics Controller PCB • Fluidics Module
3202	Advisory	Cassette test failed. Please eject and reinsert, or replace cassette.	CASSETTE_TEST_FAILED_ERR Cassette pressure and/or vacuum tests failed.	<ul style="list-style-type: none"> • Cassette • Vacuum or Pressure leak • Fluidics Controller • Fluidics Module
3203	Advisory	The cassette was not properly latched into position. Please remove and reinsert the cassette.	CASSETTE_NOT_LATCHED_ADV The cassette latch optical position sensor indicates that the latch did not reach its locked position.	<ul style="list-style-type: none"> • Cassette • Mechanical interference with latch mechanism • Latch Cylinder • Fluidics Controller PCB • Fluidics Module
3204	Error	Cassette ID sensor error. Infusion/irrigation and extraction functions will be disabled.	CASSETTE_ID_SENSOR_ERR Cassette ID sensor test failed. The sensor output voltage is not within the expected range.	<ul style="list-style-type: none"> • Cassette • Cassette ID Sensors • Suction PCB • Fluidics Controller PCB • Fluidics Module
3205	Advisory	The Fluidics module fan is not working.	FLD_MODULE_FAN_TAC_ADV The Fluidics module fan tachometer indicates that the Fluidics module fan is not operating.	<ul style="list-style-type: none"> • Fluidics Controller PCB • Fan • Fluidics Module
3207	Information	Cassette cannot be loaded. Please adjust the inlet pressure between 58 psi and 120 psi.	CASS_NO_AIR_PRSR_INFO A cassette was inserted in the receiver mechanism while the wall pressure is outside its valid operating range.	<ul style="list-style-type: none"> • User Information - See Discrepancy description
3300	Advisory	Draining cassette. Please wait.	EXT_CHAMBER_OVERFLOW_ADV The cassette aspiration chamber is full of fluid.	<ul style="list-style-type: none"> • Cassette not draining to drain bag • Fluid Level Sensors • Fluidics Controller PCB • Fluidics Module

Table 4-6 Fluidics Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
3302	Advisory	Fault - 3302 Call Field Service	EXT_NOT_IN_OP_RANGE_ADV Not enough or too much fluid in the aspiration chamber to allow aspiration flow mode and reflux. NOTE: This advisory is never explicitly displayed. Instead advisory 1239 or 1240 might be displayed if appropriate. See 1239 and 1240 for details.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3304	Advisory	Leak test failure. Please confirm the irrigation tubing, aspiration tubing, and the test chamber are properly connected to the handpiece.	EXT_HP_TUBING_LEAK_ADV A leak in the aspiration or irrigation tubing was detected during flow check of a handpiece.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3305	Advisory	Priming of the aspiration probe was unsuccessful. Please attempt to re-prime the probe.	EXT_PROBE_PRIME_FAILED_ADV Probe prime was unsuccessful. The required volume of fluid was not transferred through the aspiration tubing set within the specified timeout period.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3306	Advisory	Priming of the aspiration handpiece was unsuccessful. Please attempt to re-prime the handpiece.	EXT_HP_PRIME_FAILED_ADV Handpiece prime was unsuccessful. The required volume of fluid was not transferred through the aspiration tubing set within the specified timeout period.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3307	Error	Aspiration level sensor problem detected. Infusion/irrigation and extraction functions will be disabled.	EXT_LVL_STATUS_ERR The level sensor status signals indicate a level sensor hardware problem.	<ul style="list-style-type: none"> Aspiration Level Sensor Cable W93 Fluidics Controller PCB Fluidics Module
3308	Advisory	Flow check failure: measured flow restriction is too high. Extraction and Ultrasound functions in Phaco/Frag will be disabled.	EXT_FLOW_CHECK_FAILED_ADV The handpiece failed the flowcheck. Too high vacuum level was required to achieve the reference flow level.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3309	Advisory	Flow check failure: aspiration chamber could not be filled with fluid. Extraction and Ultrasound functions in Phaco/Frag will be disabled.	EXT_FILL_TIMEOUT_ADV The handpiece failed the flowcheck. Too high vacuum level was required to achieve the reference flow level.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3325	Advisory	Drain bag is almost full. Please replace bag and press [Done].	EXT_BAG_NEAR_FULL_ADV ~400 cc of fluid has been pumped into the drain bag.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3326	Advisory	Drain bag is full. Please replace bag and press [Done].	EXT_BAG_FULL_ADV - ~450 cc of fluid has been pumped into the drain bag.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3327	Advisory	Drain bag is critically full. Please replace bag and press [Done].	EXT_BAG_CRITICALLY_FULL_ADV ~500 cc of fluid has been pumped into the drain bag.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3329	Error	Drain pump problem detected. Infusion/irrigation and extraction functions will be disabled.	EXT_PUMP_ROTATION_ERR The commanded pump rate does not correspond to the actual pump rate measured by the optical encoder.	<ul style="list-style-type: none"> Drain Pump Fluidics Controller PCB Fluidics Module
3330	Advisory	The drain pump fan is not working.	EXT_PUMP_FAN_STATUS_ERR The drain pump fan tachometer indicates that the drain pump fan is not operating.	<ul style="list-style-type: none"> Fan Fluidics Controller PCB Fluidics Module
3331	Advisory	Could not drain the aspiration chamber. Please remove and insert a new cassette.	EXT_CHAMBER_DRAIN_TIMEOUT_ADV The aspiration chamber could not be drained within the specified timeout period.	<ul style="list-style-type: none"> Cassette Drain Pump Aspiration Level Sensor Fluidics Controller PCB Fluidics Module

Table 4-6 Fluidics Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
3350	Error	Extraction pressure transducer offset error. Infusion/irrigation and extraction functions will be disabled.	EXT_PT_OFFSET_ERR Extraction pressure transducer 0 offset out of range.	<ul style="list-style-type: none"> • Cable W86 • Fluidics Controller PCB • Suction PCB • Transducer MT7 and/or MT8 • Fluidics Module
3351	Error	Extraction pressure transducer discrepancy error. Infusion/irrigation and extraction functions will be disabled.	EXT_PT_DISCR_ERR - A discrepancy between the primary and redundant extraction pressure transducers was detected.	<ul style="list-style-type: none"> • Transducer MT7 and/or MT8 • Fluidics Controller PCB • Suction PCB • Cable W86 • Fluidics Module
3352	Error	Extraction isolation valve error. Infusion/irrigation and extraction functions will be disabled.	EXT_ISO_VLV_ERR Extraction isolation valve hardware error.	<ul style="list-style-type: none"> • L14 • Fluidics Controller PCB • Suction PCB • Cable W86 • Fluidics Module
3353	Error	Reflux valve error. Infusion/irrigation and extraction functions will be disabled.	EXT_REFLUX_VLV_ERR Extraction reflux valve hardware error.	<ul style="list-style-type: none"> • L15 • Fluidics Controller PCB • Suction PCB • Cable W86 • Fluidics Module
3354	Error	Extraction output valve (S1) error. Infusion/irrigation and extraction functions will be disabled.	EXT_OUTPUT_VLV_ERR Extraction output pincher valve (S1) error	<ul style="list-style-type: none"> • 5 Valve PCB, Yellow Lower • Cable W90 • Fluidics Controller PCB • Fluidics Module
3355	Error	Extraction output valve (S11) error. Infusion/irrigation and extraction functions will be disabled.	EXT_PORT1_VLV_ERR Extraction output port 1 pincher valve error.	<ul style="list-style-type: none"> • 3 Valve PCB, Green • Cable W90 • Fluidics Controller PCB • Fluidics Module
3356	Error	Extraction output valve (S22) error. Infusion/irrigation and extraction functions will be disabled.	EXT_PORT2_VLV_ERR Extraction output port 2 pincher valve error.	<ul style="list-style-type: none"> • 3 Valve PCB, Green • Cable W90 • Fluidics Controller PCB • Fluidics Module
3357	Error	Extraction cross-connection valve (SC) error. Infusion/irrigation and extraction functions will be disabled.	EXT_CROSS_NO_VLV_ERR Extraction "normally open" cross-connection valve error.	<ul style="list-style-type: none"> • 5 Valve PCB, Red Upper • Cable W90 • Fluidics Controller PCB • Fluidics Module
3358	Error	Extraction cross-connection valve (SC2) error. Infusion/irrigation and extraction functions will be disabled.	EXT_CROSS_NC_VLV_ERR Extraction "normally closed" cross-connection valve error.	<ul style="list-style-type: none"> • 5 Valve PCB, Red Upper • Cable W90 • Fluidics Controller PCB • Fluidics Module

Table 4-6 Fluidics Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
3359	Advisory	Suction pressure surges detected. Vacuum will be disabled. Please release the footswitch treadle to reset.	EXT_PRSR_OSCILLATION_ADV Extraction pressure oscillations detected.	<ul style="list-style-type: none"> Bubbles in tubing - Check Cassette connections and/or reprime Transducers MT7 & MT8 Fluidics Controller PCB Suction PCB Cable W86 Fluidics Module
3360	Advisory	Suction flow surges detected. Flow will be disabled. Please release the footswitch treadle to reset.	EXT_FLOW_OSCILLATION_ADV Extraction flow oscillations detected.	<ul style="list-style-type: none"> Bubbles in tubing - Check Cassette connections and/or reprime Transducers MT7 & MT8 Fluidics Controller PCB Suction PCB Cable W86 Fluidics Module
3361	Advisory	Suction pressure is too high. Vacuum will be disabled. Please release the footswitch treadle to reset.	EXT_PRSR_OVERSHOOT_ADV Extraction pressure overshoot detected.	<ul style="list-style-type: none"> Bubbles in tubing - Check Cassette connections and/or reprime Transducers MT7 & MT8 Fluidics Controller PCB Suction PCB Cable W86 Fluidics Module
3362	Advisory	Aspiration flow too high. Flow will be disabled. Please release the footswitch treadle to reset.	EXT_FLOW_OVERSHOOT_ADV Extraction flow overshoot detected.	<ul style="list-style-type: none"> Bubbles in tubing - Check Cassette connections and/or reprime Fluidics Controller PCB Suction PCB Cable W86 Fluidics Module
3363	Error	Extraction pressure transducer reference voltage out of range. Infusion/irrigation and extraction functions will be disabled.	EXT_TRANSDUCER_REFERENCE_ERR Extraction transducer reference voltage error.	<ul style="list-style-type: none"> Transducers MT7 & MT8 Fluidics Controller PCB Fluidics Module
3364	Advisory	Aspiration manifold input pressure is too high.	EXT_75_PSI_REGULATOR_ADV Extraction 75 psi pressure regulator advisory. The aspiration manifold 75 psi regulator is out of regulation. A pressure higher than 220 mmHg was measured during the regulator pressure test which is part of the cassette test.	<ul style="list-style-type: none"> Relief Valve Transducers MT7 & MT8 Fluidics Controller PCB Fluidics Module
3400	Error	Infusion source container pressure transducer offset error. Infusion/irrigation and extraction functions will be disabled.	PRSR_SRC_PT_OFFS_ERR Infusion source container pressure transducer 0 offset out of range.	<ul style="list-style-type: none"> Fluidics Infusion PCB Cable W88 Fluidics Controller PCB Fluidics Module
3401	Error	Infusion source container isolation valve error. Infusion/irrigation and extraction functions will be disabled.	PRSR_SRC_ISO_VLV_ERR Infusion source container isolation valve error.	<ul style="list-style-type: none"> Infusion 5 Valve PCB Fluidics Infusion PCB Cable W88 Fluidics Controller PCB Fluidics Module

Table 4-6 Fluidics Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
3402	Error	Infusion source container transducer discrepancy error. Infusion/irrigation and extraction functions will be disabled.	PRSR_SRC_PT_DISCR_ERR A discrepancy between the source container and LPAS pressure transducers was detected.	<ul style="list-style-type: none"> • Fluidics Infusion PCB • Cable W88 • Fluidics Controller PCB • Fluidics Module
3403	Error	Infusion source container pressure too high. Infusion/irrigation and extraction functions will be disabled.	PRSR_SRC_HI_ERR Infusion source container pressure too high.	<ul style="list-style-type: none"> • Proportional Valve - PV3 or PV6 • Fluidics Infusion PCB • Cable W88 • Fluidics Controller PCB • Fluidics Module
3420	Error	Infusion pressure transducer offset error. Infusion/irrigation and extraction functions will be disabled.	INF_PT_OFFS_ERR Infusion pressure transducer 0 offset out of range	<ul style="list-style-type: none"> • Cable W88 • Fluidics Infusion PCB • Fluidics Controller PCB • Fluidics Module
3421	Error	Infusion pressure transducer discrepancy error. Infusion/irrigation and extraction functions will be disabled.	INF_PT_DISCR_ERR A discrepancy between the primary and redundant infusion pressure transducers was detected.	<ul style="list-style-type: none"> • Cable W88 • Fluidics Infusion PCB • Fluidics Controller PCB • Fluidics Module
3422	Error	Infusion isolation valve error. Infusion/irrigation and extraction functions will be disabled.	INF_ISO_VLV_ERR Infusion isolation valve error.	<ul style="list-style-type: none"> • Infusion 5 Valve PCB • Cable W88 • Fluidics Infusion PCB • Fluidics Controller PCB • Fluidics Module
3423	Error	Infusion FAX valve error. Infusion/irrigation and extraction functions will be disabled.	INF_FAX_VLV_ERR Infusion FAX valve error.	<ul style="list-style-type: none"> • Infusion 5 Valve PCB • Cable W88 • Fluidics Infusion PCB • Fluidics Controller PCB • Fluidics Module
3424	Error	Infusion input valve error. Infusion/irrigation and extraction functions will be disabled.	INF_INPUT_VLV_ERR Infusion chamber input pincher valve error.	<ul style="list-style-type: none"> • 5 Valve PCB, Red Upper • Cable W90 • Fluidics Controller PCB • Fluidics Module
3425	Error	Infusion output valve error. Infusion/irrigation and extraction functions will be disabled.	INF_OUTPUT_VLV_ERR Infusion chamber output pincher valve error.	<ul style="list-style-type: none"> • 5 Valve PCB, Red Upper • Cable W90 • Fluidics Controller PCB • Fluidics Module
3426	Error	Irrigation output valve error. Infusion/irrigation and extraction functions will be disabled.	IRR_OUTPUT_VLV_ERR Irrigation output pincher valve error.	<ul style="list-style-type: none"> • Cassette (fluid can interfere with sensor detection and cylinder movement) • CY4-CO Cylinder • Optical position sensor • 3 Valve PCB, Green • Cable W90 • Fluidics Controller PCB • Low pressure or pressure leak. • Fluidics Module

Table 4-6 Fluidics Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
3427	Error	Infusion pressure surges detected. Infusion/irrigation and extraction functions will be disabled.	INF_OSCILLATION_ERR Infusion pressure oscillations detected.	<ul style="list-style-type: none"> • Infusion Proportional Valve • Fluidics Infusion PCB • Cable W88 • Fluidics Controller PCB • Fluidics Module
3428	Error	Infusion pressure too high. Infusion/irrigation and extraction functions will be disabled.	INF_HI_PRSR_ERR Infusion high pressure detected.	<ul style="list-style-type: none"> • Infusion Proportional Valve • Fluidics Infusion PCB • Cable W88 • Fluidics Controller PCB • Fluidics Module
3429	Advisory	Low infusion pressure detected. Please check infusion connections. Select 30 mmHg liquid backup pressure, or ignore low pressure condition.	INF_LO_PRSR_ADV Infusion pressure too low.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
3431	Advisory	Low irrigation pressure detected. Please check irrigation connections.	IRR_LO_PRSR_ADV Irrigation pressure too low.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
3433	Error	Infusion chamber isolation valve error. Infusion/irrigation and extraction functions will be disabled.	INF_ISO_VLV_STUCK_CLOSED_ERR Infusion chamber isolation valve detected to be stuck closed during power up diagnostics.	<ul style="list-style-type: none"> • Infusion 5 Valve PCB • Cable W88 • Fluidics Infusion PCB • Fluidics Controller PCB • Fluidics Module
3434	Advisory	Infusion chamber overflow error. Control of infusion pressure has possibly been lost. The current pressure, in mmHg, could be as high as:	INF_CHAMBER_OVERFLOW_ADV Infusion chamber overflow error. The fluid level in the infusion chamber reached above the overflow level.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
3436	Error	FAX valve error. Infusion/irrigation and extraction functions will be disabled.	INF_FAX_VLV_STUCK_CLOSED_ERR FAX valve detected to be stuck closed during power up diagnostics.	<ul style="list-style-type: none"> • Infusion 5 Valve PCB • Cable W88 • Fluidics Infusion PCB • Fluidics Controller PCB • Fluidics Module
3437	Error	Infusion level sensor error. Infusion/irrigation and extraction functions will be disabled.	INF_LVL_STATUS_ERR The level sensor status signals indicate a level sensor hardware problem.	<ul style="list-style-type: none"> • Infusion Level Sensor • Cable W94 • Fluidics Controller PCB • Fluidics Module
3438	Advisory	No more infusion fluid available. Press [Change] to change the fluid container.	INF_FLUID_OUT_ADV The infusion chamber in the cassette is empty.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
3440	Advisory	No more irrigation fluid available. Press [Change] to change the fluid container.	IRR_FLUID_OUT_ADV The irrigation chamber in the cassette is empty.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description
3442	Advisory	Irrigation chamber overflow detected. Control of irrigation pressure has possibly been lost. The current pressure, in mmHg, could be as high as:	IRR_CHAMBER_OVERFLOW_ADV Irrigation chamber overflow error. The fluid level in the irrigation chamber reached above the overflow level.	<ul style="list-style-type: none"> • User Advisory - See Discrepancy description

Table 4-6 Fluidics Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
3444	Advisory	Low infusion pressure. Please check connections. Select 30 mmHg air backup, or ignore low pressure condition. Backup mode will not allow extraction.	INF_FAX_MS_LO_PRSR_ADV Infusion pressure too low while in FAX with a Manual Stopcock cassette.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3460	Error	Infusion backup valve error. Infusion/irrigation, extraction, and Ultrasound functions will be disabled.	INF_BACKUP_VLV_ERR Infusion backup valve error.	<ul style="list-style-type: none"> Infusion 5 Valve PCB Cable W88 Fluidics Infusion PCB Fluidics Controller PCB Fluidics Module
3461	Error	Infusion LPAS pump error detected. Infusion/irrigation, extraction, and Ultrasound functions will be disabled.	INF_LPAS_TAC_ERR The infusion LPAS pump tachometer indicate that the LPAS pump is not operating correctly.	<ul style="list-style-type: none"> LPAS Pump Fluidics Controller PCB Fluidics Module
3462	Advisory	Infusion flow sensor communication error. IOP Control functions will be disabled.	INF_FLOW_SENSOR_COM_ERR Infusion flow sensor communication error.	<ul style="list-style-type: none"> NIFS Flow Sensor Fluidics Controller PCB Fluidics Module
3464	Advisory	Infusion flow data invalid: IOP Control functions will be disabled. Check infusion tubing for air bubbles.	INF_FLOW_DATA_INVALID_ADV Infusion flow sensor readings are not valid.	<ul style="list-style-type: none"> Bubbles Cassette Connections Flow Sensor Fluidics Controller PCB Fluidics Module
3466	Advisory	Infusion flow sensor accuracy error. IOP Control functions will be disabled.	INF_FLOW_ACCURACY_ADV Infusion flow sensor accuracy error. Flow sensor and chamber fluid volume measurements are out of range of each other. Detected during flow sensor calibration.	<ul style="list-style-type: none"> Cassette Infusion Level Sensor Cable W94 Flow Sensor Flow PCB Fluidics Controller PCB Fluidics Module
3467	Advisory	Infusion flow sensor signal amplitude is low. IOP Control functions will be disabled. Please eject and reinsert the cassette.	INF_FLOW_SIGNAL_AMPLITUDE_ADV Infusion flow sensor signal amplitude error. Detected during flow sensor calibration	<ul style="list-style-type: none"> Wrong infusion cannula selected Cassette Flow Sensor Flow PCB Fluidics Controller PCB Fluidics Module
3469	Advisory	Tubing calibration offset error. IOP Control functions will be disabled. Please position the infusion cannula at the height of the center of the cassette and re-prime.	INF_TUBING_CAL_OFFSET_ADV Infusion tubing calibration 0 offset advisory. The infusion cannula was not positioned within the correct vertical range of the cassette during calibration.	<ul style="list-style-type: none"> Cassette Flow Sensor Flow PCB Fluidics Controller PCB Fluidics Module
3470	Advisory	Calibration verification error: calculated pressures are not within the expected range. IOP Control functions will be disabled. Please re-prime.	INF_TUBING_CAL_CHECK_PT_ADV Infusion tubing calibration check point advisory. The pressure drop calculated using the acquired calibration profile was not within the expected range.	<ul style="list-style-type: none"> Cassette Flow Sensor Flow PCB Fluidics Controller PCB Fluidics Module

Table 4-6 Fluidics Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
3471	Advisory	Noisy calibration flow readings. IOP Control functions will be disabled. Please re-prime.	INF_TUBING_CAL_STDDEV_ADV Infusion tubing calibration standard deviation advisory. The standard deviation between the acquired flow measurements and the calculated calibration profile was larger than the specified max limit.	<ul style="list-style-type: none"> Wrong infusion cannula selected Cassette Flow Sensor Flow PCB Fluidics Controller PCB Fluidics Module
3472	Advisory	Infusion chamber leak detected. Please eject and replace the cassette.	INF_CHAMBER_LEAK_ADV – A leak in the infusion chambers was detected during priming.	<ul style="list-style-type: none"> Cassette
3473	Error	Infusion pressure transducer reference voltage out of range. Infusion/irrigation and extraction functions will be disabled.	INF_TRANSDUCER_REFERENCE_ERR Infusion transducer reference voltage error.	<ul style="list-style-type: none"> Cable W88 Fluidics Infusion PCB Fluidics Controller PCB Fluidics Module
3474	Error	Infusion NIFS valve error detected. Infusion/irrigation and extraction functions will be disabled.	INF_NIFS_VLV_ERR Infusion NIFS valve error.	<ul style="list-style-type: none"> Cable W88 Fluidics Infusion PCB Fluidics Controller PCB Fluidics Module
3475	Advisory	Infusion prime failed.	INF_PRIME_FAILED_ADV Infusion prime failed.	<ul style="list-style-type: none"> Infusion line clamped Cassette drip chamber check valve stuck Cassette Cassette Connectors Stuck AI or BI pincher Loss of 45psi 5 Valve PCB, Yellow Lower Cable W90 Fluidics Controller PCB Infusion Level Sensors Faulty MT5 "S1" Pressure Sensor Fluidics Module
3476	Advisory	The infusion chambers did not fill with fluid. Please check the infusion bottle and connections or press [Change] to replace the infusion bottle.	INF_CHAMBER_FILL_TIMEOUT_ADV Infusion chamber did not fill within the specified timeout period. Source container is out of fluid.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3477	Error	Infusion LPAS pressure transducer offset error. Infusion/irrigation and extraction functions will be disabled.	INF_LPAS_PT_OFFS_ERR Infusion LPAS pressure transducer 0 offset out of range.	<ul style="list-style-type: none"> Cable W88 Fluidics Infusion PCB Fluidics Controller PCB Fluidics Module
3478	Error	Infusion LPAS pressure error. Infusion/irrigation and extraction functions will be disabled.	INF_LPAS_PRSR_ERR Infusion LPAS source pressure too high.	<ul style="list-style-type: none"> Proportional valve Cable W88 Fluidics Infusion PCB Fluidics Controller PCB Fluidics Module
3479	Advisory	Infusion LPAS pressure is low. Infusion pressure loss is possible.	INF_LPAS_PRSR_LOW_ADV Infusion LPAS pump output pressure is low.	<ul style="list-style-type: none"> Proportional valve Cable W88 Fluidics Infusion PCB Fluidics Controller PCB Fluidics Module

Table 4-6 Fluidics Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
3481	Advisory	Infusion flow sensor is disconnected. IOP Control functions will be disabled.	INF_FLOW_SENSOR_DISCONNECT_ADV Infusion flow sensor is disconnected or the sensor connection has failed.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
3482	Advisory	Auto infusion valve failed to open during prime. Please replace infusion tubing and attempt to re-prime.	The AIV valve flow check performed as part of the cassette prime sequence failed.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description

Table 4-7 U/S-Diathermy Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
4100	Error	U/S voltage failure (+5 analog). Ultrasound and Diathermy functions will be disabled.	US_5_VOLT_ANALOG_ERR - US Kernel Analog 5 volt feedback is bad. US Submodule is non-functional.	<ul style="list-style-type: none"> U/S Controller PCB
4101	Error	U/S voltage failure (+2.5). Ultrasound and Diathermy functions will be disabled.	US_PLUS_2_5_VOLT_ERR - US Kernel +2.5 volt feedback is bad. US submodule is non-functional.	<ul style="list-style-type: none"> U/S Controller PCB
4102	Error	U/S voltage failure (-2.5). Ultrasound and Diathermy functions will be disabled.	US_MINUS_2_5_VOLT_ERR US Kernel -2.5 volt feedback is bad. US submodule is non-functional.	<ul style="list-style-type: none"> U/S Controller PCB
4103	Error	U/S voltage failure (+8.5). Ultrasound and Diathermy functions will be disabled.	US_8_5_VOLT_POWER_ERR US Kernel 2.5 volt feedback is bad. US submodule is non-functional.	<ul style="list-style-type: none"> U/S Controller PCB
4111	Error	US failure: SPI driver write timeout. Ultrasound and Diathermy functions will be disabled.	SPI_WRITE_TIMEOUT_ERR SPI driver timed out waiting for a write to complete. US submodule is non-functional.	<ul style="list-style-type: none"> U/S Controller PCB
4200	Advisory	Handpiece EEPROM CRC is invalid. Please replace the handpiece.	US_HP_BAD_CRC_ADV The handpiece EEPROM CRC is invalid. Handpiece needs to be replaced.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4201	Advisory	Only one US handpiece may be connected at a time. Please remove one of the handpieces.	US_HP_MULTIPLE_ADV Two US handpieces are connected. One of the handpieces must be removed before the other handpiece can be used.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4202	Advisory	Handpiece current is too low. Please replace handpiece and re-tune.	US_HP_CURRENT_ERR U/S handpiece current is too low. A short circuit in the handpiece can cause this.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4203	Advisory	Handpiece voltage is too low. Please replace handpiece and re-tune.	US_HP_VOLTAGE_ERR U/S handpiece voltage is too low. An open circuit in the handpiece can cause this.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4204	Advisory	Handpiece power is too high. Please replace handpiece and re-tune.	US_HP_EXCESSIVE_POWER_ERR U/S handpiece power output is too high.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4206	Advisory	Handpiece power DC2DC output was out of range. Please release the footswitch treadle to reset. If problem persists, please contact Field Services.	US_HP_DC2DC_ERR While powering the handpiece, the DC2DC voltage for handpiece power is out of range.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4207	Advisory	Handpiece was removed while powered. Please reconnect handpiece and re-tune.	US_HP_REMOVED_WHILE_POWERED_ADV User has disconnected the handpiece while it's being powered.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4208	Advisory	Data in handpiece EEPROM is out of range. Please replace the handpiece.	US_HP_OUT_OF_RANGE_DATA_ADV Data contained in the handpiece is out of range.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4209	Advisory	Unknown US handpiece connected. Please connect a known handpiece.	US_HP_UNKNOWN_HANDPIECE_ADV The system has detected that a US handpiece was connected but it cannot determine its type.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4210	Advisory	Unsupported US handpiece connected. Please connect a supported handpiece.	US_HP_UNSUPPORTED_HANDPIECE_ADV The system has detected the connection of a recognized US handpiece but that handpiece is not supported by this system. Handpiece is not tuned.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4220	Advisory	Tune failure – attempted while handpiece was in air. Please re-tune the handpiece.	US_TUNE_IN_AIR_ADV The handpiece was tuned while in air. Handpiece is not tuned.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description

Table 4-7 U/S-Diathermy Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
4221	Advisory	Tune failure: handpiece was removed before tuning. Please connect a handpiece and re-tune.	US_TUNE_NO_HANDPIECE_ADV A handpiece tune was requested but no handpiece is connected.	• User Advisory - See Discrepancy description
4222	Advisory	Tune failure: handpiece is an unknown type. Please connect a known handpiece and re-tune.	US_TUNE_UNKNOWN_HP_ADV A handpiece tune was requested but an unknown type of handpiece is connected.	• User Advisory - See Discrepancy description
4223	Advisory	Tune failure: handpiece has a loose tip. Please tighten the tip and re-tune.	US_TUNE_LOOSE_TIP_ADV The handpiece tip was loose when tuned. Handpiece is not tuned.	• User Advisory - See Discrepancy description
4224	Advisory	Tune failure: handpiece current is low. Please replace handpiece and re-tune.	US_TUNE_HP_CURRENT_ADV The handpiece current was too low (open circuit). Handpiece is not tuned.	• User Advisory - See Discrepancy description
4225	Advisory	Tune failure: handpiece voltage is low. Please replace handpiece and re-tune.	US_TUNE_HP_VOLTAGE_ADV The handpiece voltage was too low when tuned (short circuit). Handpiece is not tuned.	• User Advisory - See Discrepancy description
4226	Advisory	Tune failure: handpiece frequency order error. Please re-tune.	US_TUNE_FREQ_ORDER_ADV The series (low impedance) and parallel (high impedance) frequencies were out of order when the handpiece was tuned.	• User Advisory - See Discrepancy description
4228	Advisory	Tune failure: handpiece series frequency margin error. Please re-tune.	US_TUNE_FS_MARGIN_ERR The series tune frequency was too close to the tune start frequency while tuning the handpiece. The handpiece is not tuned.	• User Advisory - See Discrepancy description
4229	Advisory	Tune failure: handpiece parallel frequency margin error. Please re-tune.	US_TUNE_FP_MARGIN_ERR The parallel tune frequency was too close to the tune end frequency while tuning the handpiece. The handpiece is not tuned.	• User Advisory - See Discrepancy description
4231	Advisory	Tune failure: handpiece frequency bandwidth too low. Please re-tune.	US_TUNE_BW_LOW_ERR The difference between the series and parallel tune frequencies was too small while tuning the handpiece. The handpiece is not tuned.	• User Advisory - See Discrepancy description
4232	Advisory	Tune failure: handpiece frequency bandwidth too high. Please re-tune.	US_TUNE_BW_HIGH_ERR The difference between the series and parallel tune frequencies was too large while tuning the handpiece. The handpiece is not tuned.	• User Advisory - See Discrepancy description
4234	Advisory	Tune failure: handpiece DC2DC output out of range. Please re-tune. If problem persists, please contact Field Service.	US_TUNE_DC2DC_ERR The DC2DC voltage was out of range while tuning the handpiece. The handpiece is not tuned.	• User Advisory - See Discrepancy description
4235	Advisory	Tune failure: handpiece removed while tuning. Please connect handpiece and re-tune.	US_TUNE_HP_REMOVED_ADV The handpiece was removed while tuning. The handpiece is not tuned.	• User Advisory - See Discrepancy description
4240	Advisory	The requested Frag continuous power is too high. The Power level will be limited.	US_FRAG_POWER_TOO_HIGH_ADV A request for more than 60% frag power was made while not in a pulsed mode. The power will be limited to 60%.	• User Advisory - See Discrepancy description

Table 4-7 U/S-Diathermy Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
4400	Advisory	AutoSert* handpiece EEPROM CRC is invalid. Please replace the handpiece.	IOL_BAD_CRC_ADV The AutoSert* handpiece EEPROM CRC is invalid. Handpiece needs to be replaced.	• User Advisory - See Discrepancy description
4401	Advisory	AutoSert* handpiece impeded. Retry handpiece operation. If problem persists, please contact Field Service.	IOL_MOTOR_NOT_MOVING_ADV The AutoSert* handpiece motor is not moving – a move check timeout has occurred.	• User Advisory - See Discrepancy description
4402	Advisory	AutoSert* handpiece speed out of range. Retry handpiece operation. If problem persists, please contact Field Service.	IOL_SPEED_OUT_OF_RANGE_ADV The AutoSert* handpiece motor speed is out of range.	• User Advisory - See Discrepancy description
4403	Advisory	AutoSert* handpiece travel out of range. Reinsert/replace handpiece. If problem persists, please contact Field Service.	IOL_TRAVEL_OUT_OF_RANGE_ADV The AutoSert* handpiece motor travel is out of range.	• User Advisory - See Discrepancy description
4404	Advisory	AutoSert* handpiece calibration failed. Reinsert/replace handpiece. If problem persists, please contact Field Service.	IOL_CALIBRATION_FAILED_ADV Calibration of the AutoSert* handpiece failed. Possible causes: 1. The calibration did not complete before the 1 minute calibration timeout 2. The calculated handpiece speed is out of range 3. The handpiece travel is out of range 4. The handpiece motor is not moving	• User Advisory - See Discrepancy description
4405	Advisory	AutoSert* handpiece must be in fully retracted position prior to autoclave. Reinsert handpiece to correct.	IOL_HP_IMPROPER_DISCONNECT_ADV The AutoSert* handpiece was disconnected improperly with the plunger not in the retracted position.	• User Advisory - See Discrepancy description
4406	Advisory	AutoSert* handpiece data corrupted. Replace handpiece. If problem persists, please contact Field Service.	IOL_CORRUPT_HP_DATA_ADV The AutoSert* handpiece EEPROM contains corrupted data. Handpiece needs to be replaced.	• User Advisory - See Discrepancy description
4407	Advisory	Unknown AutoSert* handpiece connected. Please connect a known handpiece.	IOL_UNKNOWN_HP_ADV The system has detected that an AutoSert* handpiece was connected but it cannot determine its type.	• User Advisory - See Discrepancy description
4408	Advisory	Unexpected AutoSert* handpiece movement detected. Replace handpiece. If problem persists, please contact Field Service.	IOL_UNEXPECTED_MOTOR_MOVE_ADV Unexpected AutoSert* handpiece movement\ feedback was detected. Handpiece needs to be replaced.	• User Advisory - See Discrepancy description
4409	Advisory	AutoSert* handpiece motor over current detected. Retry handpiece operation. If problem persists, replace handpiece and/or contact Field Service.	IOL_MOTOR_OVERCURRENT_ADV AutoSert* handpiece motor over current condition has been detected.	• User Advisory - See Discrepancy description

Table 4-7 U/S-Diathermy Module - Faults, Errors, Advisories, and Information Messages				
Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
4410	Advisory	Preloading of IOL using the treadle is not allowed until the AutoSert* plunger has been fully retracted.	IOL_TRDLE_NOT_ALLOW_LPSTART_ADV User pressed the treadle to perform IOL Preloading when a Load Plunger command was previously started but not yet completed (and currently paused).	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
4411	Error	Submodule Failure (1.8 volt). AutoSert* functions will be disabled.	IOL_1_8_VOLTS_IS_BAD_ERR IOL Injector CPLD +1.8 Voltage is bad.	<ul style="list-style-type: none"> U/S Controller PCB
4250	Error	Ultrasound failure: ADC calibration. Ultrasound functions will be disabled.	US_ADC_CALIBRATE_ERR The ADC feedback reading with power off for DC2DC voltage, handpiece voltage, or handpiece current was too high.	<ul style="list-style-type: none"> U/S Controller PCB
4300	Error	Diathermy failure: DC2DC output was out of range. Diathermy functions will be disabled.	DIA_AMPLIFIER_ERR While powering the handpiece, the DC2DC voltage for handpiece power is out of range.	<ul style="list-style-type: none"> U/S Controller PCB
4301	Advisory	Diathermy power is too high. Please release the footswitch treadle / button and try again.	DIA_EXCESSIVE_POWER_ADV Too much power was being delivered to the diathermy handpiece. Diathermy power is turned off. The operator must release the treadle/switch and the depress the treadle/switch to re-activate power.	<ul style="list-style-type: none"> U/S Controller PCB

Table 4-8 Table Top Illuminator Module - Faults, Errors, Advisories, and Information Messages

Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
5100	Error	Ballast failure (voltage). Illuminator functions will be disabled.	ILM_VOLTAGE_SENSOR_ERR - Ballast transducer has reading that is out of specified safety range.	<ul style="list-style-type: none"> Cable W50 Illuminator Controller PCB Table Top Illuminator Module
5101	Error	Ballast failure (current). Illuminator functions will be disabled.	ILM_CURRENT_SENSOR_ERR – Ballast transducer has reading that is out of specified safety range.	<ul style="list-style-type: none"> Cable W50 Illuminator Control PCB Table Top Illuminator Module
5102	Advisory	Lamp calibration data is corrupted: lamp needs to be calibrated. Please contact Field Service.	ILM_CALIBRATION_DATA_ADV – The calibration data saved in the flash contains incorrect CRC checksum.	<ul style="list-style-type: none"> Calibration Data corrupt
5103	Advisory	Failure to turn lamp on: lamp needs to be replaced. Please contact Field Service.	ILM_LAMP_SOURCE_FAULT_ADV – Lamp status reported by hardware is not the same as software status.	<ul style="list-style-type: none"> Lamp Illuminator Controller PCB Table Top Illuminator Module
5104	Advisory	The lamp has exceeded its rated life: lamp needs to be replaced. Please contact Field Service.	ILM_LAMP_REPLACEMENT_ADV – The lamp has exceeded its rated life. The new lamp is expected.	<ul style="list-style-type: none"> Lamp
5105	Advisory	The lamp has exceeded its rated maximum life: lamp needs to be replaced. Please contact Field Service.	ILM_LAMP_INTENSITY_LOW_ADV – The lamp has exceeded its rated safe life. The new lamp should be installed immediately.	<ul style="list-style-type: none"> Lamp
5107	Advisory	The Table-Top Illuminator drawer is ejected. Please close the drawer to continue.	ILM_MODULE_DRAWER_OUT_ADV – The module has been pulled out of drawer.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
5109	Information	The calibration data for the Illuminator has changed: due to recalibration or replacement with a new unit.	ILM_MODULE_REPLACED_INFO – The calibration data is changed..	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
5113	Advisory	Metrics data is corrupted; Lamp hour is invalid. Please contact Field Service.	ILM_METRICS_CORRUPT_ADV – The metrics data for lamp hours is invalid. Either the Flash is corrupted or the checksum is incorrect.	<ul style="list-style-type: none"> Illuminator Controller PCB Table Top Illuminator Module
5200	Advisory	Illuminator optics temperature is high. The lamp will be turned off if the temperature continues to rise.	ILM_OPTICS_TEMP_HIGH_ADV – Optics temperature is too high. Lamp is going to be shut down if temperature continues to rise.	<ul style="list-style-type: none"> Dirty Air Filter - located below Illuminator Optics Fan (W29) Illuminator Controller PCB Table Top Illuminator Module
5201	Error	Illuminator optics temperature has exceeded its limit. Illuminator functions will be disabled.	ILM_OPTICS_TEMP_DOWN_ERR – Illuminator is shut down because Optics temperature is too high.	<ul style="list-style-type: none"> Dirty Air Filter - (located below Illuminator) Optics Fan (W29) Illuminator Controller PCB Table Top Illuminator Module
5202	Advisory	Illuminator optics fan is at full speed. Optics unit may be overheating.	ILM_OPTICS_FAN_ALARM_ADV – Warning that the Optics fan is full on.	<ul style="list-style-type: none"> Dirty Air Filter - (located below Illuminator) Optics Fan (W29) Illuminator Controller PCB Table Top Illuminator Module
5203	Error	Illuminator optics thermo-cut-off has been triggered. Illuminator functions will be disabled.	ILM_OPTICS_OVER_TEMP_ERR – Lamp is turned off because thermo cut-off.	<ul style="list-style-type: none"> Dirty Air Filter - (located below Illuminator) Optics Fan (W29) Optics Thermal Switch Illuminator Controller PCB Table Top Illuminator Module

Table 4-8 Table Top Illuminator Module - Faults, Errors, Advisories, and Information Messages

Error Code	Classification	Displayed Text	Discrepancy Description	Possible Causes
5204	Advisory	Communication failure with the Illuminator optics fan. The fan may not work properly.	ILM_OPTICS_FAN_COMMS_ADV – Communication Error with optics fan.	<ul style="list-style-type: none"> Communication - Eject and reinsert Illuminator Cable W81 Illuminator Controller PCB
5300	Advisory	Illuminator ballast temperature is high. The lamp will be turned off if the temperature continues to rise.	ILM_BALLAST_TEMP_HIGH_ADV – Ballast temperature is too high. Lamp is going to be shut down if temperature continues to rise.	<ul style="list-style-type: none"> Dirty Air Filter - (located below Illuminator) Ballast Fan (W28) Illuminator Controller PCB Table Top Illuminator Module
5301	Error	Illuminator ballast temperature has exceeded its limit. Illuminator functions will be disabled.	ILM_BALLAST_TEMP_DOWN_ERR – Illuminator is shut down because Ballast temperature is too high.	<ul style="list-style-type: none"> Dirty Air Filter - (located below Illuminator) Ballast Fan (W28) Illuminator Controller PCB Table Top Illuminator Module
5302	Advisory	Illuminator ballast fan is at full speed. Ballast unit may be overheating.	ILM_BALLAST_FAN_ALARM_ADV – Warning that the Ballast fan is full on.	<ul style="list-style-type: none"> Dirty Air Filter - (located below Illuminator) Ballast Fan (W28) Illuminator Controller PCB Table Top Illuminator Module
5303	Error	Illuminator ballast thermo-cut-off has been triggered. Illuminator functions will be disabled.	ILM_BALLAST_OVER_TEMP_ERR – Lamp is turned off because thermo cut-off.	<ul style="list-style-type: none"> Dirty Air Filter - (located below Illuminator) Ballast Fan (W28) Illuminator Controller PCB Table Top Illuminator Module
5304	Advisory	Communication failure with the Illuminator ballast fan. The fan may not work properly.	ILM_BALLAST_FAN_COMMS_ADV – Communication Error with ballast fan.	<ul style="list-style-type: none"> Communication - Eject and reinsert Illuminator Cable W09 Illuminator Controller PCB Interface (Floating) PCB
5400	Error	Lamp louver failure: unable to move to home position. Left port will be disabled.	ILM_STEP_MOTOR1_HOME_ERR – Step motor at port 1 failed to move to home position.	<ul style="list-style-type: none"> Home Sensor PCB. Home Sensor cable Port 1 Stepper Motor assy. Interface PCB Illuminator Controller PCB Table Top Illuminator Module
5401	Error	Lamp louver failure: unable to move to home position. Right port will be disabled.	ILM_STEP_MOTOR2_HOME_ERR – Step motor at port 2 failed to move to home position.	<ul style="list-style-type: none"> Home Sensor PCB. Home Sensor cable Port 2 Stepper Motor assy. Interface PCB Illuminator Controller PCB Table Top Illuminator Module
5402	Error	Lamp louver failure: unable to move to specified position. Left port will be disabled.	ILM_STEP_MOTOR1_MOVE_ERR – Step motor at port 1 failed to move to specified position.	<ul style="list-style-type: none"> Port 1 Stepper Motor Assy Illuminator Controller PCB Table Top Illuminator Module
5403	Error	Lamp louver failure: unable to move to specified position. Right port will be disabled.	ILM_STEP_MOTOR2_MOVE_ERR – Step motor at port 2 failed to move to specified position.	<ul style="list-style-type: none"> Port 2 Stepper Motor Assy Illuminator Controller PCB Table Top Illuminator Module

Table 4-9 Pneumatic Module - Faults, Errors, Advisories, and Information Messages

ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Causes
6101	Error	Pressure reading is too high. Cutting and Pneumatics functions will be disabled.	PNU_CMN_PRESSURE_TOO_HIGH_ERR – Pneumatics pressure is too high.	<ul style="list-style-type: none"> Air Distribution Assy Pneumatic Controller PCB Cable W47 Pneumatic Module
6103	Error	Pneumatics pressure transducers reference voltage is unacceptable. Pneumatics functions are disabled.	PNU_CMN_ADC_2048_ERR – Pneumatics ADC 2048 mv. Reference voltage is beyond acceptable range.	<ul style="list-style-type: none"> Air Distribution Assy Pneumatic Controller PCB Cable W47 Pneumatic Module
6104	Error	Pneumatics Air Distribution transducers offset voltage is unacceptable. Pneumatics functions are disabled.	PNU_CMN_AIR_ADC_OFFSET_ERR – Pneumatics Air Distribution PCB reference offset voltage is beyond acceptable range.	<ul style="list-style-type: none"> Air Distribution Assy Pneumatic Controller PCB Cable W47 Pneumatic Module
6105	Error	Pneumatics Main Manifold transducers offset voltage is unacceptable. Pneumatics functions are disabled.	PNU_CMN_MAIN_ADC_OFFSET_ERR – Pneumatics Main Manifold PCB reference offset voltage is beyond acceptable range.	<ul style="list-style-type: none"> Air Distribution Assy Pneumatic Controller PCB Cable W47 Pneumatic Module
6201	Error	Air Pressure valves have high transition faults. Cutting and Pneumatics functions will be disabled.	PNU_AIR_VALVE_FAULT_HI_ERR - AirPressure valves have high level faults (fail to open).	<ul style="list-style-type: none"> Air Distribution Assy Pneumatic Controller PCB Cable W47 Pneumatic Module
6202	Error	Air Pressure valves have low transition faults. Cutting and Pneumatics functions will be disabled.	PNU_AIR_VALVE_FAULT_LO_ERR - AirPressure valves have low level faults (fail to close).	<ul style="list-style-type: none"> Air Distribution Assy Pneumatic Controller PCB Cable W47 Pneumatic Module
6203	Advisory	Air Pressure inlet filter may be dirty and needs to be replaced. Please contact Field Service.	PNU_AIR_FILTER_DIRTY_ADV - The unusual high pressure drop cross the Air Filter. This is caused by either the Air Filter is too dirty and need to be replaced or the system may be leaking air.	<ul style="list-style-type: none"> Filter needs changing Air Distribution Assy Pneumatic Controller PCB
6204	Advisory	Inlet pressure is too low; adjust to between 90-120 psi. System may have reduced performance between 58-90 psi..	PNU_AIR_LOW_SWITCH_ON_ADV - The Air source (wall pressure) is too low (below 58 psi) to turn on. On startup, Pneumatics turns on the pressure automatically if the pressure is between 58 psi and 120 psi.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description Air Distribution Assy Pneumatic Controller PCB Cable W47 Pneumatic Module
6206	Advisory	Inlet pressure is too high; adjust to between 90-120 psi.	PNU_AIR_HIGH_SWITCH_ON_ADV - The Air source (wall pressure) is too high (above 120 psi) to turn on. On startup, Pneumatics turns on the pressure automatically if the pressure is between 58 psi and 120 psi.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description Air Distribution Assy Pneumatic Controller PCB Cable W47 Pneumatic Module
6209	Advisory	Inlet pressure is below 90 psi; system may have reduced performance. Adjust to between 90-120 psi.	PNU_AIR_PRESSURE_90PSI_ADV - The Air source pressure is below 90 psi. System performance will be diminished.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description

Table 4-9 Pneumatic Module - Faults, Errors, Advisories, and Information Messages

ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Causes
6211	Advisory	The source pressure transducer is out of specification. Please contact Field Service.	PNU_AIR_SENSOR_CALIBRATED_ADV - The source pressure transducer is out of specification.	<ul style="list-style-type: none"> Air Distribution Assy Pneumatic Controller PCB Cable W47 Pneumatic Module
6301	Error	Cutting errors; valves have high transition faults (failed to open). Cutting functions will be disabled.	PNU_CUT_VALVE_FAULT_HI_ERR - Cutters valves have high level faults (fail to open).	<ul style="list-style-type: none"> Cutter Circuit valves Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6302	Error	Cutting errors; valves have low transition faults (failed to close). Cutting functions will be disabled.	PNU_CUT_VALVE_FAULT_LO_ERR - Cutters valves have low level faults (fail to close).	<ul style="list-style-type: none"> Cutter Circuit valves Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6303	Error	Cutting error: redundant transducers discrepancy error. Cutting functions will be disabled. Please contact Field Service.	PNU_CUT_REDUNDANT_SENSORS_ERR – Cutters redundant transducers discrepancy error.	<ul style="list-style-type: none"> Cutter Circuit Transducers Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6304	Error	Cutting error: redundant transducers calibration. Cutting functions will be disabled. Please contact Field Service.	PNU_CUT_SENSOR_CALIBRATION_ERR – Cutters redundant transducers calibration error.	<ul style="list-style-type: none"> Cutter Circuit Transducers Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6305	Advisory	Cutting pressure is oscillating beyond the specified range. Please release the footswitch treadle to reset.	PNU_CUT_PRESSURE_OSCIL_ADV – Cutters actual pressure is oscillating beyond the specified tolerance.	<ul style="list-style-type: none"> Unstable pressure - possible leak Proportional Valve Cutter Circuit Transducers Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6306	Advisory	Cutting pressure is surging beyond the specified tolerance. Please release the footswitch treadle to reset.	PNU_CUT_PRESSURE_SURGE_ADV – Cutters actual pressure is surging beyond the specified tolerance.	<ul style="list-style-type: none"> Unstable pressure - possible leak Proportional Valve Cutter Circuit Transducers Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6307	Advisory	Vitrectomy port transducers are out of tolerance. The Vit Probe is still available. Please contact Field Service.	PNU_CUT_VIT_SENSOR_FAULT_ADV – Vit. port transducers discrepancy error. SmartVit function is disabled.	<ul style="list-style-type: none"> Calibration needed Vit Transducers Vit Valve Pneumatic Controller PCB Pneumatic Module

Table 4-9 Pneumatic Module - Faults, Errors, Advisories, and Information Messages

ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Causes
6308	Advisory	Pneumatics Flash is in need of Service. The Vit Probe is still available. Please contact Field Service.	PNU_CUT_VIT_FLASH_FAULT_ADV – The Pneumatics Flash memory is in need of Service.	<ul style="list-style-type: none"> Pneumatic Controller PCB Pneumatic Module
6401	Error	Utilities valves have high transition faults (failed to open). Pneumatics functions will be disabled.	PNU_UTL_VALVE_FAULT_HI_ERR - Utilities valves have high level faults (fail to open).	<ul style="list-style-type: none"> Utility Circuit valves Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6402	Error	Utilities valves have low transition faults (failed to close). Pneumatics functions will be disabled.	PNU_UTL_VALVE_FAULT_LO_ERR - Utilities valves have low level faults (fail to close).	<ul style="list-style-type: none"> Utility Circuit valves Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6403	Error	Utilities redundant transducers discrepancy error. Pneumatics functions will be disabled. Please contact Field Service.	PNU_UTL_REDUNDANT_SENSORS_ERR – Utilities redundant transducers discrepancy error.	<ul style="list-style-type: none"> Utilities Circuit Transducers Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6404	Error	Utilities redundant transducers calibration error. Pneumatics functions will be disabled. Please contact Field Service.	PNU_UTL_SENSOR_CALIBRATION_ERR – Utilities redundant transducers calibration error.	<ul style="list-style-type: none"> Utilities Circuit Transducers Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6405	Error	Vacuum redundant transducers discrepancy error. Pneumatics functions will be disabled. Please contact Field Service.	PNU_VAC_REDUNDANT_SENSORS_ERR – Vacuum redundant transducers discrepancy error.	<ul style="list-style-type: none"> VFC Vacuum Transducers Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6406	Error	Vacuum redundant transducers calibration error. Pneumatics functions will be disabled. Please contact Field Service.	PNU_VAC_SENSOR_CALIBRATION_ERR – Vacuum redundant transducers calibration error.	<ul style="list-style-type: none"> VFC Vacuum Transducers Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module
6407	Advisory	Pressure is unstable. Release the footswitch treadle or restart AGF.	PNU_UTL_PRESSURE_OSCIL_ADV – Utilities actual pressure is oscillating beyond the specified tolerance.	<ul style="list-style-type: none"> Unstable pressure - possible leak Proportional Valve Cutter Circuit Transducers Transducer Interface PCB Cable W122 Pneumatic Controller PCB Pneumatic Module

Table 4-9 Pneumatic Module - Faults, Errors, Advisories, and Information Messages				
ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Causes
6408	Advisory	Utilities pressure is surging beyond the specified tolerance. Please release the footswitch treadle to reset.	PNU_UTL_PRESSURE_SURGE_ADV – Utilities actual pressure is surging beyond the specified tolerance.	<ul style="list-style-type: none"> • Unstable pressure - possible leak • Proportional Valve • Cutter Circuit Transducers • Transducer Interface PCB • Cable W122 • Pneumatic Controller PCB • Pneumatic Module
6501	Error	Auto Gas valves have high transition faults (failed to open). Pneumatics functions will be disabled.	PNU_AGF_VALVE_FAULT_HI_ERR - Auto Gas valves have high level faults (fail to open).	<ul style="list-style-type: none"> • AGF valves • Transducer Interface PCB • Cable W122 • Pneumatic Controller PCB • Pneumatic Module
6502	Error	Auto Gas valves have low transition faults (failed to close). Pneumatics functions will be disabled.	PNU_AGF_VALVE_FAULT_LO_ERR - Auto Gas valves have low level faults (fail to close).	<ul style="list-style-type: none"> • AGF valves • Transducer Interface PCB • Cable W122 • Pneumatic Controller PCB • Pneumatic Module
6503	Error	Auto Gas redundant transducers discrepancy error. Pneumatics functions will be disabled. Please contact Field Service.	PNU_AGF_REDUNDANT_SENSORS_ERR – Auto Gas redundant transducers discrepancy error.	<ul style="list-style-type: none"> • AGF Transducers • Transducer Interface PCB • Cable W122 • Pneumatic Controller PCB • Pneumatic Module
6504	Error	Auto Gas redundant transducers calibration error. Pneumatics functions will be disabled. Please remove AGF syringe if connected.	PNU_AGF_SENSOR_CALIBRATION_ERR – Auto Gas redundant transducers calibration error.	<ul style="list-style-type: none"> • AGF Transducers • Transducer Interface PCB • Cable W122 • Pneumatic Controller PCB • Pneumatic Module
6505	Advisory	C3F8 bottle may be empty and needs to be replaced. Please press [Replaced] to confirm bottle replacement.	PNU_AGF_GAS_1_EMPTY_ADV – Gas 1 bottle may be empty and needs to be filled up.	<ul style="list-style-type: none"> • C3F8 Valve • Transducer Interface PCB • Cable W122 • Pneumatic Controller PCB • Pneumatic Module
6506	Advisory	SF6 bottle may be empty and needs to be replaced. Please press [Replaced] to confirm bottle replacement.	PNU_AGF_GAS_2_EMPTY_ADV - Gas 2 bottle may be empty and needs to be filled up.	<ul style="list-style-type: none"> • SF6 Valve • Transducer Interface PCB • Cable W122 • Pneumatic Controller PCB • Pneumatic Module
6507	Advisory	Unable to run Auto Gas Filling without sufficient source pressure.	PNU_AGF_NO_AIR_PRESSURE_ADV – There is not enough air pressure to support Auto Gas Filling functions.	<ul style="list-style-type: none"> • Check Rear panel connection • AGF Transducers • Transducer Interface PCB • Cable W122 • Pneumatic Controller PCB • Pneumatic Module

Table 4-10 Auxiliary Illuminator Module - Faults, Errors, Advisories, and Information Messages

ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Causes
7100	Error	Ballast failure (voltage). Illuminator functions will be disabled.	ILM_VOLTAGE_SENSOR_ERR - Ballast transducer has reading that is out of specified safety range.	<ul style="list-style-type: none"> Cable W25 Illuminator Controller PCB Auxiliary Illuminator Module
7101	Error	Ballast failure (current). Illuminator functions will be disabled.	ILM_CURRENT_SENSOR_ERR – Ballast transducer has reading that is out of specified safety range.	<ul style="list-style-type: none"> Cable W25 Illuminator Controller PCB Auxiliary Illuminator Module
7102	Advisory	Lamp calibration data is corrupted: lamp needs to be calibrated. Please contact Field Service	ILM_CALIBRATION_DATA_ADV – The calibration data saved in the flash contains incorrect CRC checksum.	<ul style="list-style-type: none"> Calibration Data corrupt
7103	Advisory	Failure to turn lamp on: lamp needs to be replaced. Please contact Field Service.	ILM_LAMP_SOURCE_FAULT_ADV – Lamp status reported by hardware is not the same as software status.	<ul style="list-style-type: none"> Lamp Illuminator Controller PCB Auxiliary Illuminator Module
7104	Advisory	The lamp has exceeded its rated life: lamp needs to be replaced. Please contact Field Service.	ILM_LAMP_REPLACEMENT_ADV – The lamp has exceeded its rated life. The new lamp is expected.	<ul style="list-style-type: none"> Lamp
7105	Advisory	The lamp has exceeded its rated maximum life: lamp needs to be replaced. Please contact Field Service.	ILM_LAMP_INTENSITY_LOW_ADV – The lamp has exceeded its rated safe life. The new lamp should be installed immediately.	<ul style="list-style-type: none"> Lamp
7113	Advisory	Metrics data is corrupted; Lamp hour is invalid. Please contact Field Service.	ILM_METRICS_CORRUPT_ADV – The metrics data for lamp hours is invalid. Either the Flash is corrupted or the checksum is incorrect.	<ul style="list-style-type: none"> Illuminator Controller PCB
7200	Advisory	Illuminator optics temperature is high. The lamp will be turned off if the temperature continues to rise.	ILM_OPTICS_TEMP_HIGH_ADV – Optics temperature is too high. Lamp is going to be shut down if temperature continues to rise.	<ul style="list-style-type: none"> Dirty air filter. (located below the Illuminator). Optics fan W20. Illuminator Controller PCB Auxiliary Illuminator Module
7201	Error	Illuminator optics temperature has exceeded its limit. Illuminator functions will be disabled.	ILM_OPTICS_TEMP_DOWN_ERR – Illuminator is shut down because Optics temperature is too high.	<ul style="list-style-type: none"> Dirty air filter. (located below the Illuminator). Optics fan W20. Illuminator Controller PCB Auxiliary Illuminator Module
7202	Advisory	Illuminator optics fan is at full speed. Optics unit may be overheating.	ILM_OPTICS_FAN_ALARM_ADV – Warning that the Optics fan is full on.	<ul style="list-style-type: none"> Dirty air filter. (located below the Illuminator). Optics fan W20. Illuminator Controller PCB Auxiliary Illuminator Module
7203	Error	Illuminator optics thermo-cut-off has been triggered. Illuminator functions will be disabled.	ILM_OPTICS_OVER_TEMP_ERR – Lamp is turned off because thermo cut-off.	<ul style="list-style-type: none"> Dirty air filter. (located below the Illuminator). Optics fan W20. Optics Thermal Switch Illuminator Controller PCB Auxiliary Illuminator Module

Table 4-10 Auxiliary Illuminator Module - Faults, Errors, Advisories, and Information Messages

ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Causes
7204	Advisory	Communication failure with the Illuminator optics fan. The fan may not work properly.	ILM_OPTICS_FAN_COMMS_ADV – Communication Error with optics fan.	<ul style="list-style-type: none"> Communication - Eject and reinsert Illuminator Cable W11 Illuminator Controller PCB Auxiliary Illuminator Module
7300	Advisory	Illuminator ballast temperature is high. The lamp will be turned off if the temperature continues to rise.	ILM_BALLAST_TEMP_HIGH_ADV – Ballast temperature is too high. Lamp is going to be shut down if temperature continues to rise.	<ul style="list-style-type: none"> Dirty air filter. (located below the Illuminator). Ballast Fan (W33) Illuminator Controller PCB Auxiliary Illuminator Module
7301	Error	Illuminator ballast temperature has exceeded its limit. Illuminator functions will be disabled.	ILM_BALLAST_TEMP_DOWN_ERR – Illuminator is shut down because Ballast temperature is too high.	<ul style="list-style-type: none"> Dirty air filter. (located below the Illuminator). Ballast Fan (W33) Illuminator Controller PCB Auxiliary Illuminator Module
7302	Advisory	Illuminator ballast fan is at full speed. Ballast unit may be overheating.	ILM_BALLAST_FAN_ALARM_ADV – Warning that the Ballast fan is full on.	<ul style="list-style-type: none"> Dirty air filter. (located below the Illuminator). Ballast Fan (W33) Illuminator Controller PCB Auxiliary Illuminator Module
7303	Error	Illuminator ballast thermo-cut-off has been triggered. Illuminator functions will be disabled.	ILM_BALLAST_OVER_TEMP_ERR – Lamp is turned off because thermo cut-off.	<ul style="list-style-type: none"> Dirty air filter. (located below the Illuminator). Ballast Fan (W) Illuminator Controller PCB Auxiliary Illuminator Module
7304	Advisory	Communication failure with the Illuminator ballast fan. The fan may not work properly.	ILM_BALLAST_FAN_COMMS_ADV – Communication Error with ballast fan.	<ul style="list-style-type: none"> Communication - Eject and reinsert Illuminator cable W11 Illuminator Controller PCB Auxiliary Illuminator Module
7400	Error	Lamp louver failure: unable to move to home position. Left port will be disabled.	ILM_STEP_MOTOR3_HOME_ERR – Step motor at port 3 failed to move to home position.	<ul style="list-style-type: none"> Home Sensor PCB. Home Sensor cable Port 3 Stepper Motor assy. Interface PCB Illuminator Controller PCB Auxiliary Illuminator Module
7401	Error	Lamp louver failure: unable to move to home position. Right port will be disabled.	ILM_STEP_MOTOR4_HOME_ERR – Step motor at port 4 failed to move to home position.	<ul style="list-style-type: none"> Home Sensor PCB. Home Sensor cable Port 4 Stepper Motor assy. Interface PCB Illuminator Controller PCB Auxiliary Illuminator Module
7402	Error	Lamp louver failure: unable to move to specified position. Left port will be disabled.	ILM_STEP_MOTOR3_MOVE_ERR – Step motor at port 3 failed to move to specified position.	<ul style="list-style-type: none"> Port Stepper Motor assy. Interface PCB Illuminator Controller PCB Auxiliary Illuminator Module

Table 4-10 Auxiliary Illuminator Module - Faults, Errors, Advisories, and Information Messages				
ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Causes
7403	Error	Lamp louver failure: unable to move to specified position. Right port will be disabled.	ILM_STEP_MOTOR4_MOVE_ERR – Step motor at port 4 failed to move to specified position.	<ul style="list-style-type: none"> • Port 3 Stepper Motor assy. • Interface PCB • Illuminator Controller PCB • Auxiliary Illuminator Module

Table 4-11 Laser Module - Faults, Errors, Advisories, and Information Messages

ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Cause
8100	Error	Laser controller software error. Laser functions will be disabled.	LSR_SOFTWARE_ERR - bad process communication	<ul style="list-style-type: none"> Reload system software and recalibrate
8101	Error	Laser controller shutter open for too long error. Laser functions will be disabled.	LSR_SHUTR_OPN_TOO_LONG_ERR - laser beam not properly detected at port	<ul style="list-style-type: none"> Photocell Alignment Top Sensor PCB
8102	Error	Laser controller shutter unexpected error. Laser functions will be disabled.	LSR_SHUTR_UNEXPECTED_ERR - shutter open or position sense problem (at startup)	<ul style="list-style-type: none"> Shutter position or sense
8103	Error	Laser controller shutter open between firing error. Laser functions will be disabled.	LSR_SHUTR_OPN_BTWN_FIRING_ERR - shutter closed or position sense problem (at startup)	<ul style="list-style-type: none"> Shutter jammed mechanically Top Sensor PCB
8104	Error	Laser controller mirror incorrect position error. Laser functions will be disabled.	LSR_MIRROR_INCORRECT_POS_ERR - Sensor reporting both or no Port Mirror position (at startup)	<ul style="list-style-type: none"> Port Mirror Switch Sensor Top Sensor PCB Bottom Sensor PCB
8105	Error	Laser controller mirror position unexpected error. Laser functions will be disabled.	LSR_MIRROR_POS_UNEXPECTED_ERR - Sensor reporting both or no Port Mirror position (at startup)	<ul style="list-style-type: none"> Port Mirror Switch Sensor Top Sensor PCB Bottom Sensor PCB
8106	Error	Laser controller power over the limit error. Laser functions will be disabled.	LSR_PWR_OVER_LIMIT_ERR - laser power measure fluctuates >20%	<ul style="list-style-type: none"> PMON calibration Power Driver PCB
8107	Advisory	Laser controller maximum current exceeded.	LSR_MAX_CURRENT_EXCEEDED_ADV - laser diode current exceeds max limit -	<ul style="list-style-type: none"> Temperature Calibration Laser head;
8108	Error	Laser controller port power detection error. Laser functions will be disabled.	LSR_PORT_PWR_DETECTION_ERR - laser power incorrectly detected (during normal run time)	<ul style="list-style-type: none"> Photocell beam alignment Photocells Top Sensor PCB
8109	Error	Laser controller power detected at wrong port error. Laser functions will be disabled.	LSR_PWR_AT_WRONG_PORT_ERR - laser detected at wrong port, or not detected at selected port (during normal run time)	<ul style="list-style-type: none"> Port Mirror Switch jammed mechanically; Sensor Top Sensor PCB Bottom Sensor PCB
8110	Error	Laser controller power reading mismatch error. Laser functions will be disabled.	LSR_PWR_READING_MISMATCH_ERR - pmons disagree by >20%	<ul style="list-style-type: none"> PMONs calibration Top Sensor PCB;
8111	Error	Laser controller LBO crystal limit error. Laser functions will be disabled.	LSR_LBO_CRYSTAL_LIMIT_ERR - LBO temp out of limit	<ul style="list-style-type: none"> LBO temp calibration Mid-Extension PCB;
8112	Error	Laser controller pump temperature limit error. Laser functions will be disabled.	LSR_PUMP_TEMP_LIMIT_ERR - laser diode temp out of limit	<ul style="list-style-type: none"> Temperature related - Allow unit to reach normal room temp Mid-Extension PCB;
8113	Error	Laser controller power detect digital I/O mismatch error. Laser functions will be disabled.	LSR_PWR_DETECT_DIO_MISMATCH_ERR - laser photo detect digital input problem	<ul style="list-style-type: none"> Controller PCB

Table 4-11 Laser Module - Faults, Errors, Advisories, and Information Messages

ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Cause
8114	Error	Laser controller footswitch digital I/O mismatch error. Laser functions will be disabled.	LSR_FTSW_DIO_MISMATCH_ERR - footswitch digital inputs problem	<ul style="list-style-type: none"> Controller PCB
8115	Error	Laser controller footswitch no NC (normally closed) error. Laser functions will be disabled.	LSR_FTSW_NO_NC_ERR - footswitch inputs show both NO and NC active	<ul style="list-style-type: none"> Footswitch Back Panel PCB
8116	Error	Laser controller system data CRC error.	LC_SYSTEM_DATA_CRC_ERR - calculated CRC incorrect (for one of the .dat data files)	<ul style="list-style-type: none"> Temperatures, PMONs, term efficiencies, etc. Calibration,
8117	Advisory	Laser controller internal parameter error.	LSR_INTERNAL_PARAMETER_ADV - Bad parameter call	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8118	Error	Laser controller process hunt error. Laser functions will be disabled.	LSR_PROCESS_HUNT_ERR - startup process issue	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8119	Error	Laser controller process attach error. Laser functions will be disabled.	LSR_PROCESS_ATTACH_ERR - startup process issue	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8120	Error	Laser controller start up time out error. Laser functions will be disabled.	LSR_START_UP_TIME_OUT_ERR - state machine error	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8121	Error	Laser controller JEM CRC error. Laser functions will be disabled.	LSR_JEM_CRC_ERR - crc for JEM incorrect	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8122	Error	Laser controller kernel CRC error. Laser functions will be disabled.	LSR_KERNEL_CRC_ERR - crc for Kernel incorrect	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8123	Error	Laser controller flash file error. Laser functions will be disabled.	LSR_FLASH_FILE_ERR - crc for Laser App incorrect	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8124	Advisory	Laser LBO diode over temperature error.	LSR_PUMP_OVERTEMP_ADV - Advisory Only for temperature setpoints	<ul style="list-style-type: none"> Recalibrate temperatures
8125	Advisory	Laser LBO diode under temperature error.	LSR_PUMP_UNDERTEMP_ADV - Advisory Only for temperature setpoints	<ul style="list-style-type: none"> Recalibrate temperatures
8126	Advisory	Laser controller crystal over-temperature error.	LSR_CRYSTAL_OVERTEMP_ADV - Advisory Only for temperature setpoints	<ul style="list-style-type: none"> Recalibrate temperatures
8127	Advisory	Laser controller crystal under-temperature error.	LSR_CRYSTAL_UNDERTEMP_ADV - Advisory Only for temperature setpoints	<ul style="list-style-type: none"> Recalibrate temperatures
8129	Advisory	Laser controller probe connection error.	LSR_PPP_PROBE_CONNECTION_ADV - Probe Detection; mis-match between sensor pairs	<ul style="list-style-type: none"> Sensors or sensor position Probe Detect PCB
8131	Error	Laser controller power monitor POST error. Laser functions will be disabled.	LSR_PMON_POST_FAIL_ERR - pmons fail POST	<ul style="list-style-type: none"> PMON calibration Top Sensor PCB;

Table 4-11 Laser Module - Faults, Errors, Advisories, and Information Messages

ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Cause
8132	Error	Laser controller +2.5 volt out-of-range error. Laser functions will be disabled.	LSR_PLUS_2_5_VOLT_ERR - 2.5V on Laser Controller out of range	<ul style="list-style-type: none"> Controller PCB
8134	Error	Laser controller 12 volt power error. Laser functions will be disabled.	LSR_12_VOLT_POWER_ERR - 12V on Power Driver PCB out of range	<ul style="list-style-type: none"> Power Driver PCB
8135	Error	Laser shutter timer expired error. Laser functions will be disabled.	LSR_SHUTTER_TIMER_OFF_ERR - shutter timer timed out	<ul style="list-style-type: none"> Exposure time calibration shutter is jammed mechanically shutter sensor Top Sensor PCB
8138	Error	Laser controller diode thermal electric cooler error. Laser functions will be disabled.	LSR_DIODE_TEC_FAULT_ERR - Main TEC (thermo-electric-cooler) problem	<ul style="list-style-type: none"> TEC Power Driver PCB
8139	Error	Laser probe port process POST error. Laser functions will be disabled.	LSR_PPP_POST_FAULT_ERR - unable to switch port mirror or detect position	<ul style="list-style-type: none"> Port mirror jammed mechanically Top Sensor PCB;
8140	Error	Laser controller startup timeout error (laser engine). Laser functions will be disabled.	LC_LE_STARTUP_TIMEOUT_ERR - state machine error	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8141	Error	Laser controller startup timeout error (shutter control process). Laser functions will be disabled.	LC_SCP_STARTUP_TIMEOUT_ERR - state machine error	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8142	Error	Laser controller startup timeout error (supervisor process). Laser functions will be disabled.	LC_SUP_STARTUP_TIMEOUT_ERR - state machine error	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8143	Error	Laser controller startup timeout error (peripheral management process). Laser functions will be disabled.	LC_PMP_STARTUP_TIMEOUT_ERR - state machine error	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8144	Error	Laser controller startup timeout error (probe port process). Laser functions will be disabled.	LC_PPP_STARTUP_TIMEOUT_ERR - state machine error	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8145	Error	Laser controller startup timeout error (laser system controller). Laser functions will be disabled.	LC_LSC_STARTUP_TIMEOUT_ERR -	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8147	Error	Laser controller TMP crystal startup timeout error. Laser functions will be disabled.	LC_TMP_CRYSTAL_POST_ERR - LBO temp not stable (on startup)	<ul style="list-style-type: none"> Recalibrate temperatures
8148	Error	Laser controller TMP diode startup timeout error. Laser functions will be disabled.	LC_TMP_DIODE_POST_ERR - laser diode temp not stable (on startup)	<ul style="list-style-type: none"> Recalibrate temperatures
8149	Error	Laser controller Dr Filter error. Laser functions will be disabled.	LC_DRFILTER_ERR - reads both NC and NO contacts active	<ul style="list-style-type: none"> Dr filter Rear Panel PCB
8150	Error	Laser controller invalid maximum power error. Laser functions will be disabled.	LC_INVALID_MAX_POWER_ERR - Invalid power request	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8153	Error	Laser controller load module CRC error. Laser functions will be disabled.	LC_LOADMODULE_CRC_ERR - Invalid software load	<ul style="list-style-type: none"> Wipe memory, reload all software and recalibrate
8154	Error	Laser controller module requires calibration. Laser functions will be disabled.	LC_CALIBRATION_REQUIRED_ERR - A valid calibration flag is missing	<ul style="list-style-type: none"> Calibration

Table 4-11 Laser Module - Faults, Errors, Advisories, and Information Messages

ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Cause
8155	Error	Laser Hardware and Software version incompatibility error. Laser functions will be disabled.	LC_VERSION_INCOMPATIBLE_ERR - Version Incompatibility	<ul style="list-style-type: none"> Check all Software and Hardware Revision levels, Wipe memory, reload all software and recalibrate as needed.
8156	Error	Laser controller power monitor saturation error. Laser functions will be disabled.	LC_PMON_SATURATION_ERR - PMON Voltage problem	<ul style="list-style-type: none"> PMON calibration PMON assembly Top Sensor PCB
8200	Advisory	Laser controller probe removed while firing.	LSR_PRBE_REMOVE_WHEN_FIRING_ADV - Laser controller probe removed while firing.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8202	Advisory	Laser controller Dr. Filter disengaged while firing.	LSR_FLTR_DISENG_WHEN_FIRING_ADV - Laser controller Dr. Filter disengaged while firing.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8203	Advisory	Laser controller Dr. Filter disconnected while firing.	LSR_FLTR_DISCON_WHEN_FIRING_ADV - Laser controller Dr. Filter disconnected while firing.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8204	Advisory	Laser controller interlock opened while firing.	LSR_INTRLK_OPN_WHEN_FIRING_ADV - Laser controller interlock opened while firing.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8205	Advisory	Laser controller footswitch disconnected while firing.	LSR_FTSW_DISCON_WHEN_FIRING_ADV - Laser controller footswitch disconnected while firing.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8207	Advisory	Laser controller port changed in Ready State.	LSR_PORT_CHANGE_IN_RDYSTE_ADV - Laser controller port changed in Ready State.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8208	Advisory	Laser controller Dr. Filter disengaged in Ready State.	LSR_FLTR_DISENG_IN_RDYSTE_ADV - Laser controller Dr. Filter disengaged in Ready State.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8209	Advisory	Laser controller Dr. Filter disconnected in Ready State.	LSR_FLTR_DISCON_IN_RDYSTE_ADV - Laser controller Dr. Filter disconnected in Ready State.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8210	Advisory	Laser controller interlock opened in Ready State.	LSR_INTRLK_OPN_IN_RDYSTE_ADV - Laser controller interlock opened in Ready State.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8211	Advisory	Laser controller footswitch removed in Ready State.	LSR_FTSW_REMOVE_IN_RDYSTE_ADV - Laser controller footswitch removed in Ready State.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8212	Advisory	Laser controller footswitch engaged when Ready requested.	LSR_FTSW_ENGAGE_WHEN_RDYREQ_ADV - Laser controller footswitch engaged when Ready requested.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8213	Advisory	Laser controller user data CRC error.	LSR_USER_DATA_CRC_ERROR_ADV - Laser controller user data CRC error.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8214	Advisory	Laser controller Ready State denied: the filter is disengaged.	LcRdyDeniedFilterDisAdv- Laser controller Ready State denied: the filter is disengaged.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description

Table 4-11 Laser Module - Faults, Errors, Advisories, and Information Messages

ErrorCode	Classification	Displayed Text	Discrepancy Description	Possible Cause
8215	Advisory	Laser controller Ready State denied: there is no interlock.	LcRdyDeniedNoInterlockAdv - Laser controller Ready State denied: there is no interlock.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8216	Advisory	Laser controller Ready State denied: there is no valid probe for the active port.	LcRdyDeniedNoPortSelAdv - Laser controller Ready State denied: there is no valid probe for the active port.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8217	Advisory	Laser controller Ready State denied: the footswitch is depressed.	LcRdyDeniedFtswPressAdv - Laser controller Ready State denied: the footswitch is depressed.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8218	Advisory	Are all necessary Dr. Filters properly installed and connected?	LcRdyDeniedFiltrVerAdv - User requests going to Ready Mode when the doctor filters haven't been verified.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8219	Advisory	Laser controller Ready State denied: there is no footswitch present.	LC_RDY_DENIED_NO_FTSW_ADV - User presses the Laser Ready button when no footswitch is connected.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8220	Advisory	Laser controller Dr. Filter connected while in Transition, Ready or Firing State.	LC_DRFILTER_CON_TRF_ADV - User connects an engaged Dr. Filter while in Transition / Ready or Firing mode and an Endo probe is connected to the active port.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8221	Advisory	Laser controller detected a port Hardware failure.	LC_PORT_HW_FAILURE_ADV - Laser controller detected a port Hardware failure.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description
8222	Advisory	Port can't be selected: the probe type for the port isn't valid.	LC_PORT_DENIED_INVLD_PROBE_ADV - The user tries to make a laser port the active port, using one of the Purepoint console port selection buttons, but the currently selected probe type for that port is invalid.	<ul style="list-style-type: none"> User Advisory - See Discrepancy description

SECTION FIVE SCHEMATICS

DESCRIPTION	PART NUMBER	PAGE #
System Console Interconnect Diagram	212-5002-801 K	5.3
System Base Interconnect Diagram	212-5003-801 C	5.10
Fluidics Diagram	212-1445-801 A	5.12
Fluidics Diagram	212-3245-801 B	5.17
Pneumatics Diagram	212-1023-801 D	5.22
Footswitch	212-1083-501 X	5.24
Cables, Interconnect, Constellation*		
W01 - Base Cable, Footswitch	212-1678-001 E	5.25
W17, 20, 21, 24, 27 - Console Cable, Ethernet W02, 07, 11 - Base	212-1560-xxx F	5.25
W04 - Base Cable, Power Out	212-1681-001 C	5.25
W03 - Base Cable, Data IO	212-1680-001 F	5.26
W05 - Base Cable, AC Power In	212-2201-001 E	5.26
W18, 30, 32, 34, 83 - Console Cable, 24V DC W08, 10, 23 - Base	212-1561-xxx C	5.26
W09 - Base Cable, Slot ID	212-1689-001 C	5.27
W12 - Base Cable, Ground Equi	212-2019-001 C	5.27
W12 - Console Cable, Video, LVDS	212-1871-001 D	5.27
W13 - Console Cable, Interface, Display	212-1872-001 D	5.28
W14 - Console Cable, Speaker, Right	212-1557-001 C	5.28
W14 - Base Cable, DC Power	212-2220-001 C	5.28
W40 - Base Cable, DC Power	212-2220-002 C	5.28
W61, 62 - Console Cable, SATA SIG	212-2383-001 A	5.28
W15 - Console Cable, Speaker, Left	212-1557-002 C	5.28
W15 - Base Cable, AC In	212-2221-001 D	5.28
W16 - Console Cable, Host Interface	212-1559-001 B	5.29
W16 - Base Cable, PS Control	212-2222-001 B	5.29
W120, 121 - Console Cable, Ground W17, 36 - Base	212-2223-XXX B	5.29
W19 - Base Cable, Laser Interface	212-1996-001 B	5.29
W29 - Console Cable, Fan W20 - Base	212-2268-002 D	5.30
W117 - Console Cable, Ballast Interface W21 - Base	212-2655-001 C	5.30
W22 - Console Cable, Footswitch	212-1565-001 E	5.30

DESCRIPTION	PART NUMBER	PAGE #
W23 - Console Cable, Ethernet to Base	212-1566-001 C	5.30
W51 - Console Cable, Illum Opt Intfc W24 - Base	212-2196-001 G	5.31
W50 - Console Cable, Ballast Interface W25 - Base	212-2198-XXX G	5.31
W25 - Console Cable, Data IO	212-1568-001 D	5.32
W26 - Console Cable, Slot ID	212-1569-001 D	5.32
W52 - Console Cable, Illum RF ID INTFC W26 - Base	212-2199-001 B	5.32
W27 - Base Cable, Flex Aux Illum	212-2657-001 B	5.33
W28 - Console Cable, Fan	212-2267-002 D	5.33
W33 - Base Cable, Fan Ballast	212-2267-003 D	5.33
W115, 116 - Console Cable, Home Pos Sensor W28, 29 - Base	212-2658-001 B	5.33
W113, 114 - Console Cable, Stepper Motor W30, 31 - Base	212-2656-001 B	5.33
W31 - Console Cable, U/S Ring Illum	212-2269-001 C	5.34
W102 - Console Cable, Thermistor, Illum W32 - Base	212-2623-001 B	5.34
W118, 119 - Console Cable, Fiber Detect W34, 35 - Base	212-2266-001 B	5.34
W35, 40 - Console Cable, U/S	212-2271-001 L	5.34
W36 - Console Cable, AC Output	212-1579-001 D	5.35
W39 - Console Cable, Host Fan	212-2893-001 C	5.35
W37, 154, 155, 156, 159 - Console Cable, AC Output	212-1580-XXX B	5.35
W37 - Base Cable, Ground	212-2832-001 C	5.35
W38 - Base Cable, Ground	212-2833-001 B	5.35
W150 - Console Cable, Gnd, Illum Ejctr W39 - Base	212-2957-XXX B	5.36
W41 - Console Cable, Standby Sw	212-1584-001 B	5.36
W41 - BASE, Cable Assy, LIO	212-2685-001 F	5.36
W42 - Console Cable, Diathermy	212-2273-001 D	5.36
W42 - Base, Cable, Assy, Keypress	212-2686-001 F	5.36
W43 - Console Cable, Fan	212-1586-001 C	5.36
W43 - Base, Cable, Assy, E-Stop Laser	212-2663-001 E	5.36
W44 - Console Cable, AC In Breaker	212-1587-001 F	5.36

DESCRIPTION	PART NUMBER	PAGE #
W46 - Console Cable, 24 VDC	212-1589-001 B	5.37
W47 - Console Cable, Pneu Dist	212-2062-001 B	5.37
W48 - Console Cable, Supervisor Inf	212-2063-001 B	5.37
W53 - Console Cable, Pwr Sup Cntrl	212-2257-001 C	5.37
W49 - Console Cable, Circuit, Flex Illum	212-2531-001 B	5.38
W54 - Console Cable, DC Power, Main	212-2258-001 B	5.38
W55 - Console Battery, Power Module	212-2227-002 H	5.38
W56 - Console Cable, AC Control	212-2260-001 B	5.38
W57 - Console Cable, AC Power	212-2261-001 B	5.39
W58 - Console Cable, ATX Power	212-2381-001 C	5.39
W59, 60 - Console Cable, SATA Power	022-183 A	5.39
W63 - Console Cable, DVD Power	212-2384-001 B	5.39
W64 - Console Cable, IDE Signal	212-2385-001 B	5.40
W66 - Console Cable, Front Panel USB	212-2387-001 B	5.40
W68, 79 - Console Cable, Power Front Panel	212-2389-001 B	5.40
W67 - Console Cable, LVDS Signal	212-2388-001 B	5.41
W69 - Console Cable, Serial, IO Ext	212-2390-001 E	5.41
W70, 71 - Console Cable, Serial, Ext	212-2391-XXX D	5.41
W72 - Console Cable, VGA, Ext	212-3084-001 B	5.42
W73 - Console Cable, Ethernet Extn	212-2393-001 B	5.42
W74 - Console Cable, USB, Port Ext W165 – CR3 ONLY	212-2394-001 D	5.42
W75, 76 - Console Cable, Audio Ext	212-2395-001 C	5.42
W78 - Console Cable, S-Video, Out Ext	212-2397-001 E	5.42
W77 - Console Cable, VOM Signal, Ext	212-2396-001 C	5.43
W80 - Console Cable, Expansion Pwr Sgnl	212-2399-001 B	5.43
W81 - Console Cable, I/O Control	212-2499-001 C	5.44
W84, 160 - Console Cable, Fluidics Fan	212-2937-001 D	5.44
W85 - Console Cable, Cassette ID	212-2293-001 B	5.44
W87 - Cable, Flat, 2mm IDC Socket	023-095 B	5.44
W89, 91 - Console Cable, Prop Valve	212-2633-001 C	5.44
W86 - Console Cable, Suction Control	212-2291-001 B	5.45
W88 - Console Cable, Inf Controller	212-2252-001 B	5.45
W90 - Console Cable, X Valve	212-2288-001 C	5.46

DESCRIPTION	PART NUMBER	PAGE #
W92 - Cable Assy, Prop Valve, 3S	212-2632-001 C	5.46
W93 - Cable, Ribbon, 20 Cond 20 Inch	023-091 B	5.46
W94 - Cable, Ribbon, 26 Cond 20 Inch	023-092 B	5.46
W95 - Console Cable, SMC Cass-Rel	212-2294-001 B	5.46
W96 - Console Sensor, Pressure, ABS 30	212-2580-001 C	5.47
W97 - Console Sensor, Pressure, ABS 100	212-2579-001 C	5.47
W98, 106 - Console Cable, Cass In Sensor	212-2292-xxx B	5.47
W99 - Console Cable, Latch Pos	212-2272-001 C	5.47
W100, 107, 108 - Console Cable, Prop Valve, LW	212-2634-001 C	5.47
W101 - Console Motor, Stepper W/Encoder	212-2575-001 C	5.47
W103 - Console Cable, Sensor, Flow	212-2308-001 C	5.48
W104 - Console Cable, LPAS Pump	212-2290-001 B	5.48
W105 - Console Cable, Sens, Pincher	212-2284-001 E	5.48
W109-111 - Cable Assy, Prop Valve, 3S	212-2632-001 C	5.48
W122 - Console Cable, Pneu, Interface	212-2596-001 B	5.49
W112 - Console Cable, Fan	212-2604-001 C	5.49
W125, 129, 130 - Console Cable, SMC Valve	212-2591-001 B	5.49
W126 - Console Cable, W126	212-2747-001 B	5.49
W128 - Console Cable, W128	212-2748-001 D	5.50
W131 - Console Cable, Vit	212-2594-001 B	5.50
W132 - Cable Assy, Vit Valves	212-3395-001 B	5.50
W132 - Cable Assy, Vit Valve, L5 7500	212-3394-001 B	5.50
W135 - Console Cable, SMC Valve	212-2593-001 C	5.51
W136, 137 - Console Cable, Press Snr 300	212-2588-001 E	5.51
W139-146 - Console Cable, Press Snr 100	212-2590-001 E	5.51
W147, 149 - Console Cable, Press Snr 30	212-2589-001 E	5.51
W148 - Console Cable, RFID	212-2595-001 C	5.51
W157 - Cable Assy, Ground Strap, Display	212-3209-001 B	5.52
W158 - Console Cable, Illum Ground Strap	212-2667-001 C	5.52
W161 - Console Cable, Display, BLT Invert	212-1873-001 B	5.52
W162 - Console Cable, Display, IR Snr Rt	212-1874-001 B	5.52
W163 - Console Cable, Display, IR Snr Lft	212-1875-001 B	5.52
W164 - Console Cable, Disp, SD Card Reader	212-1876-001 B	5.52
W166, 167 - Cable Assy, HDMI Panel, MT Ext (CR3 ONLY)	212-3426-001 A	5.53
W168 - Cable Assy, BLT Invert	212-3401-001 A	5.53

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REVISION HISTORY

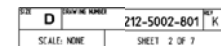
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C	20110018	01/10/11
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E	CN016042ECN	03/31/11
F	CN019525ECN	07/21/11
G	CN020497ECN	11/07/11
H	CN033330ECN	09/04/12
J	CN042229ECN	06/18/13
K	CN047202ECN	08/28/13

NOTE:
PARTS THAT HAVE MORE THAN ONE PART NUMBER AND POTENTIAL COMPATIBILITY ISSUES ARE LISTED IN TABLE 1. THESE ARE NOTED ON THE DRAWING WITH A LETTER DESIGNATION IN PARENTHESIS.

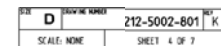
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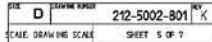
ITEM	DESCRIPTION	PART NUMBER	NOTES
..A.	DISPLAY	212-1003-501 212-3206-501	212-1003-501 CONTAINS LCD 088-055. BUILT IN SYSTEMS BELOW SERIAL NUMBER 0901879801X 212-3206-501 CONTAINS LCD 088-071. BUILT IN SYSTEMS SERIAL NUMBER 0901879801X AND ABOVE.
..B.	LCD	088-055 088-071	088-055 BUILT IN SYSTEMS BELOW SERIAL NUMBER 0901879801X 088-071 BUILT IN SYSTEMS SERIAL NUMBER 0901879801X AND ABOVE. 088-077 REPLACES 088-071
..C.	DISPLAY INTERFACE PCB	212-1794-501 212-3326-501	212-1794-501 IS OBSOLETE AND REPLACED BY 212-3326-501. BUILT IN SYSTEMS SERIAL NUMBER 1003363201X AND ABOVE. REFERENCE ECN 20100475.
..D.	FLUIDICS MODULE	212-1445-501 212-3245-501 212-3245-502	THE COMPLETE MODULE ASSEMBLY IS DOWNWARD COMPATIBLE. HOWEVER THE LEVEL SENSORS AND PRIMARY MANIFOLD ARE NOT. THE LEVEL SENSORS ARE FIELD REPLACEABLE AND WE MUST ENSURE THAT THE CORRECT PART IS INSTALLED IN THE RESPECTIVE MODULE. SEE ITEMS E & F. THE PRIMARY MANIFOLD IS NOT FIELD REPLACABLE.
..E.	INFUSION LEVEL SENSOR	212-3054-501 212-3137-501 212-3137-502	212-3054-501 IS USED IN MODULE 212-1445-501. BUILT IN SYSTEMS BELOW SERIAL NUMBER 0903231801X. 212-3137-501 USED IN MODULE 212-3245-501. BUILT IN SYSTEMS SERIAL NUMBER 0903231801X. 212-3137-502 IS USED IN MODULE 212-3245-502.
..F.	ASPIRATION LEVEL SENSOR	212-3055-501 212-3138-501	212-3055-501 IS USED IN MODULE 212-1445-501. BUILT IN SYSTEMS BELOW SERIAL NUMBER 0903231801X. 212-3138-501 USED IN MODULE 212-3245-501 AND -502. BUILT IN SYSTEMS SERIAL NUMBER 0903231801X AND ABOVE.
..G.	PNEUMATICS MAIN PCB	212-2672-501 212-2672-502	212-2672-501 IS OBSOLETE AND REPLACED BY 212-2672-502. BUILT IN SYSTEMS SERIAL NUMBER 0902088601X AND ABOVE.
..H.	PNEUMATICS RFID PCB	212-1621-501 212-3216-501	INTERCHANGEABLE. 212-3216-501 REPLACED 212-1621-501. CUT IN APPROX MAY 2009 REFERENCE ECN20090807.
..I.	MOTHERBOARD	210-2513-003 210-2513-004 210-2513-005	INTERCHANGEABLE. 210-2513-004 REPLACED 210-2513-003. CUT IN SERIAL NUMBER 0902247501X APPROX JULY 2009. 212-1010-501 HOST 210-2513-005 CUT INTO 212-1010-502 HOST
..J.	FLOW SENSOR PCB	212-2316-001 212-3219-501	INTERCHANGEABLE. 212-3219-501 REPLACED 212-2316-001. CUT IN APPROXIMATELY FEBRUARY 2ND REFERENCE ECN 20100155.
..K.	SUPERVISOR MODULE	212-2947-501 212-2947-502 212-3334-502	212-2947-502 REPLACED 212-2947-501. CUT IN SERIAL NUMBER 101569601X REFERENCE ECN 20100395. 212-3334-502 REPLACED 212-2947-502 AND COMBINES PCB AND MODULE INTO SINGLE PART NUMBER.
..L.	DVD	276-132 276-163	INTERCHANGEABLE. 276-163 REPLACED 276-132. CUT IN APPROXIMATELY SEPT. 2009 REFERENCE ECN 20091791. 276-374 REPLACES 276-163. CUT IN APPROXIMATELY NOVEMBER 2010. REFERENCE ECN 20101902. 276-393 REPLACES 276-374.
..M.	ILLUMINATOR RFID	212-1630-501 212-3200-501	INTERCHANGEABLE. 212-3200-501 REPLACED 212-1630-501. CUT IN APPROXIMATELY APRIL 2005 REFERENCE ECN 20090616.
..N.	HOST MODULE	212-1010-501 212-1010-502 212-1010-503 212-3408-501	212-1010-501 INITIAL RELEASE 212-1010-502 CHANGE WITH -005 MOTHERBOARD AND BUILT IN SYSTEMS SERIAL NUMBER 1003214001X AND ABOVE. REFERENCE ECN 20101902. 212-1010-503 -ALCON JAPAN WITHOUT WIFI -VERIFY COMPATIBILITY. REFERENCE ECN 20102198. 212-3408-501(LR) AND ABOVE ONLY.
..P.	WIFI CARD	276-124	NOT INCLUDED IN 212-1010-503 HOST
..Q.	WIFI ANTENNA CABLE W79	276-139 212-2389-001	
..R.	SD CARD READER PCB	212-1834-501 212-1834-502	INTERCHANGEABLE 212-1834-502 REPLACED 212-1834-501. CUT IN APPROXIMATELY JULY 2011.
..S.	W132 CABLE	212-3235-001 212-3395-001	INTERCHANGEABLE 212-3395-001 (7500 CPM TESTED) REPLACED 212-3235-001 (5000 CPM TESTED). CUT IN APPROXIMATELY NOVEMBER 2011. NOTE: 212-1394-001 IS STAND ALONE 15 VALVE (7500 CPM TESTED).
..T.	HDD	276-133 276-170 276-192	276-370 (160GB) REPLACED 276-133 (80GB) BUILT IN SERIAL NUMBER 1003214001X. REFERENCE ECN 20101902. 276-392 (160GB) REPLACES 276-170 (160GB). NOTE: A 160GB DRIVE MAY BE USED AS A REPLACEMENT FOR AN 80GB. BUT THE 80GB MAY NOT BE USED TO REPLACE A 160GB.
..U.	BACKLIGHT INVERTER	276-121 276-388	276-321 BUILT IN SYSTEMS WITH LCD 088-055 & 088-071 276-388 BUILT IN SYSTEMS WITH LCD 088-077.
..V.	LOWER EXPANSION PANEL PCB	212-1869-501 212-3273-501	212-1869-501 BUILT IN SYSTEMS WITH HOST MODULE 212-1010-1XX 212-3273-501 BUILT IN SYSTEMS WITH HOST MODULE 212-3408-4XX.
..W.	UPPER EXPANSION PANEL PCB	212-1868-501 212-3274-501	212-1868-501 BUILT IN SYSTEMS WITH HOST MODULE 212-1010-1XX 212-3274-501 BUILT IN SYSTEMS WITH HOST MODULE 212-3408-4XX.
..X.	ATTENUATOR HOME SENSOR PCB	212-2413-501 212-2413-502	INTERCHANGEABLE. 212-2413-502 REPLACED 212-2413-501. CUT IN APPROXIMATELY JUNE 2011. REFERENCE ECN 20100863.
..Y.	ILLUMINATOR CABLE 1/F PCB	212-1974-501 212-3336-501	212-1974-501 REPLACED 212-3336-501. CUT IN SERIAL NUMBER 1011919001X. REFERENCE ECN 20100863.
..Z.	BACKLIGHT INVERTER CABLE	212-1873-001 212-3401-001	212-1873-001 (W76) BUILT IN SYSTEMS WITH LCD 088-055 & 088-071 212-3401-001 (W76). BUILT IN SYSTEMS WITH LCD 088-077.

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
R. FARMER M. ESCALANTE M. KOSMALA 6/30/2005		THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.	DESCRIPTION DIAGRAM.NGVS.TOP CONSOLE D 212-5002-801 SCALE: NONE SHEET 1 OF 7	
POLYLINK MODEL ATTRIBUTES		NAME: MODEL NAME	VERSION: K.0	









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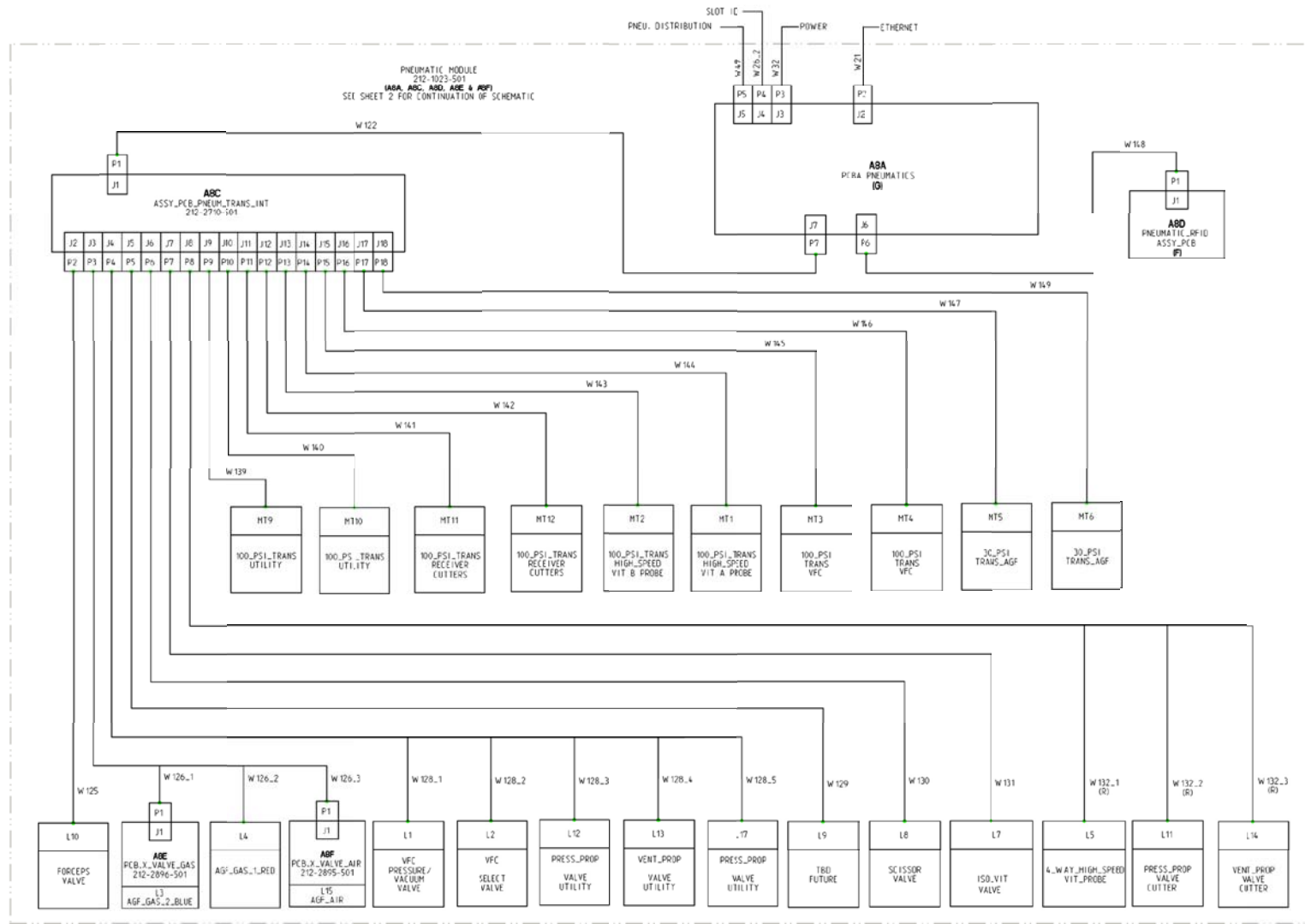
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REF DES	CONNECTION REF DES	ALCON PART NUMBER	DESCRIPTION
FROM	TO		
MODULE/CONNECTOR	MODULE/CONNECTOR		
W100	A9CP2,1-2	PV6_V_E_VALVE	212-2634-001 CABLE ASSY PROP VALVE LW
W101	A9A1	A9M MOTOR	212-2575-001 MOTOR STEPPER W/ENCODER W101
W102	A9AP6	A9L SENSOR	212-2623-001 ASSY CABLE THERMISTOR ILLUM
W103	A9AP16	MT2_FAN SENSOR	212-2304-001 CABLE ASSY SENSOR FLOW W103
W104	A9AP18	P2_PUMP	212-2290-001 CABLE ASSY LPAS PUMP W104
W105_1	A9AP5	D51_SAO_SENSOR	212-2284-001 CABLE ASSY SENS PINCHER W105
W105_2	A9AP5	D52_SBO_SENSOR	212-2284-001 CABLE ASSY SENS PINCHER W105
W105_3	A9AP5	D53_SCO_SENSOR	212-2284-001 CABLE ASSY SENS PINCHER W105
W105_4	A9AP5	D54_SSC_SENSOR	212-2284-001 CABLE ASSY SENS PINCHER W105
W106	A9AP4	D56_S_CL_SENSOR	212-2292-002 CABLE ASSY CASS IN SENSOR W106
W107	A9CP2,3-4	PV5_V_B_VALVE	212-2634-001 CABLE ASSY PROP VALVE LW
W108	A9CP2,5-6	PV4_V_A_VALVE	212-2634-001 CABLE ASSY PROP VALVE LW
W109	A9CP2,7-8	PV1_P_A_VALVE	212-2632-001 CABLE ASSY PROP VALVE JS
W110	A9CP2,9-10	PV3_P_E_VALVE	212-2632-001 CABLE ASSY PROP VALVE JS
W111	A9CP2,11-12	PV2_P_B_VALVE	212-2632-001 CABLE ASSY PROP VALVE JS
W112	A3AP0	M1J1	212-2604-001 CABLE ASSY FAN
W113	A6AP3	A6F MOTOR	212-2656-001 ASSY CABLE STEPPER MOTOR
W114	A6AP4	A6G MOTOR	212-2656-001 ASSY CABLE STEPPER MOTOR
W115	A6AP1	A6J P1	212-2658-001 ASSY CABLE HOME SENSOR
W116	A6AP2	A6AP1	212-2658-001 ASSY CABLE HOME SENSOR
W117_1	A6B15	A6DP1	212-2655-001 ASSY CABLE BALLAST INTFC
W117_2	A6B15	A6DP2	212-2655-001 ASSY CABLE BALLAST INTFC
W117_3	A6B15	A6D THERM	212-2655-001 ASSY CABLE BALLAST INTFC
W118	A6C22	1.FIBER_DETECT	212-3000-001 CABLE ASSY FBR DETECT MOUNTED
W119	A6C3	2.FIBER_DETECT	212-3000-001 CABLE ASSY FBR DETECT MOUNTED
W12	A2AP2	A1AP1	212-1871-001 ASSY CABLE VIDEO_V05
W120	A3B1	A3P1	212-2223-002 CABLE_3ND
W121	A3A1	A3P1	212-2223-003 CABLE_3ND
W122	A6AP3	A6P1	212-2656-001 CABLE ASSY PNEU INTERFACE W122
W125	A6C2	L10	212-2591-001 CABLE ASSY SMC VALVE
W126_1	A6C3	A6P1	212-2747-001 CABLE ASSY W126
W126_2	A6C3	L4	212-2747-001 CABLE ASSY W126
W126_3	A6C3	A6P1	212-2747-001 CABLE ASSY W126
W126_4	A6C4	L1	212-2748-001 CABLE ASSY W126
W126_5	A6C4	L2	212-2748-001 CABLE ASSY W126
W126_6	A6C4	L12	212-2748-001 CABLE ASSY W126
W126_7	A6C4	L13	212-2748-001 CABLE ASSY W126
W126_8	A6C4	L17	212-2748-001 CABLE ASSY W126
W129	A6C5	L9	212-2591-001 CABLE ASSY SMC VALVE
W13	A1P1	A2AP3	212-1872-001 ASSY CABLE INTERFACE DISPLAY
W130	A6C6	L8	212-2591-001 CABLE ASSY SMC VALVE
W131	A6C7	L7	212-2594-001 CABLE ASSY VIT W131
W132_1	A6C8	L5	212-3395-001 CABLE ASSY VIT VALVES W132
W132_2	A6C8	L5	212-3394-001 CABLE ASSY VIT VALVES W132
W132_3	A6C8	L11	212-3395-001 CABLE ASSY VIT VALVES W132
W132_4	A6C8	L14	212-3395-001 CABLE ASSY VIT VALVES W132
W135	A4AP2	L16	212-2593-001 CABLE ASSY SMC VALVE
W136	A4AP3	MT8	212-2588-001 CABLE ASSY PRESS SNR 300
W137	A4AP4	MT7	212-2588-001 CABLE ASSY PRESS SNR 300
W139	A6P9	MT9	212-2590-001 ASSY CABLE PRESS SNR 100
W14	A2B6	SPEAKER_LS2	212-2383-001 ASSY CABLE RIGHT SPEAKER
W140	A6P10	MT10	212-2590-001 ASSY CABLE PRESS SNR 100
W141	A6P11	MT11	212-2590-001 ASSY CABLE PRESS SNR 100
W142	A6P12	MT12	212-2590-001 ASSY CABLE PRESS SNR 100
W143	A6P13	MT13	212-2590-001 ASSY CABLE PRESS SNR 100
W144	A6P14	MT14	212-2590-001 ASSY CABLE PRESS SNR 100
W145	A6P15	MT15	212-2590-001 ASSY CABLE PRESS SNR 100
W146	A6P16	MT16	212-2590-001 ASSY CABLE PRESS SNR 100
W147	A6P17	MT17	212-2589-001 CABLE ASSY PRESS SNR 100
W148	A6AP6	A8DP1	212-2595-001 CABLE ASSY RFID W148
W149	A6P18	MT18	212-2589-001 CABLE ASSY PRESS SNR 30
W15	A2B7	SPEAKER_LS1	212-2383-001 ASSY CABLE LEFT SPEAKER
W150	A1P2	A1P2	212-1873-002 CABLE ASSY GND TT ILLUM EJECTR
W154	A125_GND	A16ND1	212-1580-002 ASSY CABLE W154 AC IN
W155	A125_LINE	SW IP2	212-1580-003 ASSY CABLE W155 AC IN
W156	A124_GND	A16ND2	212-1580-004 ASSY CABLE W156 AC IN
W157	A16ND	A135G	212-1209-001 ASSY GROUND STRAP DISPLAY
W158	A6E12	A14SG	212-2667-001 ASSY CABLE ILLUM GROUND STRAP
W159	A16ND3	A10P1	212-1580-005 ASSY CABLE W159 GROUND
W16	A3AP6	A2B1	212-1559-001 ASSY CABLE HOST INTERFACE W16
W160	A9AP7	A9M FAN	212-2548-001 CABLE ASSY FLUIDICS FAN
W162	A1P7	A1P1	212-1874-001 CABLE ASSY DISPLAY IN SNR RT
W163	A1P6	A1P1	212-1875-001 CABLE ASSY DISPLAY IN SNR LFT
W164	A1P3	A1P1	212-1876-001 CABLE ASSY DISP, SB CARD READER
W165	A2CP20	A2CP10	212-2394-001 CABLE ASSY USB PORT EXT W16
W166	A2CP4	A2KHDMI_IN	212-3426-001 CABLE ASSY HDMI PANEL MT EXT
W167	A2CP5	A2KHDMI_OUT	212-3426-001 CABLE ASSY HDMI PANEL MT EXT

REF DES	CONNECTION REF DES	ALCON PART NUMBER	DESCRIPTION
FROM	TO		
MODULE/CONNECTOR	MODULE/CONNECTOR		
W17	A2CP9	A5AP22-4	212-1560-001 ASSY CABLE ETHERNET W17
W18	A5AP13	A3AP16	212-1561-001 CABLE ASSY 24V DC W18
W20	A5AP22-2	A7AP6	212-1560-002 ASSY CABLE ETHERNET I/O
W21	A5AP22-1	A5AP22-1	212-1560-003 ASSY CABLE ETHERNET PWR
W22	A5AP305	A12J1	212-1565-001 ASSY CABLE W12 F0015W ITC
W23	A5AP21-1	A12J2	212-1566-001 ASSY CABLE W12 ETHERNET TO BASE
W24	A5AP21-2	A9P1	212-1560-004 ASSY CABLE ETHERNET FLUIDICS
W25_1	A5AP304	A12J3	212-1568-001 ASSY CABLE W25 DATA I/O
W25_2	A12J3	A3AP7	212-1568-001 ASSY CABLE W25 DATA I/O
W26_1	A9AP10	A5AP300	212-1569-001 ASSY CABLE SLOTT ID
W26_2	A8AP4	A5AP300	212-1569-001 ASSY CABLE SLOTT ID
W26_3	A7AP2	A5AP300	212-1569-001 ASSY CABLE SLOTT ID
W27	A3EP8	A5AP22-3	212-1560-008 ASSY CABLE THERMET W27
W28	M2_FAN	M2P1	212-2263-002 CABLE ASSY FAN W28
W29	M3_FAN	M3P2	212-2268-002 CABLE ASSY FAN W29
W30	A3AP16	A7AP1	212-1561-004 CABLE ASSY 24V DC W30
W31	A7AP20	A7CP1	212-2269-001 ASSY CABLE L/S RING ILLUM W31
W32	A8AP3	A3AP7	212-1561-005 CABLE ASSY 24V DC W32
W34	A3AP15	A9AP9	212-1561-006 CABLE ASSY 24V DC W34
W35_1	A7EP2	A7AP2	212-2271-001 ASSY CABLE I/O W35
W35_2	A7EP2	A7AP16	212-2271-001 ASSY CABLE I/O W35
W36_1	A3EP6	A12J4_LINE	212-1579-001 ASSY CABLE W36 AC OUTPUT
W36_2	A3EP6	A12J4_NEUT	212-1579-001 ASSY CABLE W36 AC OUTPUT
W37	A12J5_NEUT	SW IP1	212-1580-001 ASSY CABLE W37 AC IN
W39	A2F_FAN	A2BP14	212-2093-001 ASSY CABLE HOST FAN W39
W40_1	A7AP13	A7AP13	212-2271-002 ASSY CABLE I/O W40
W40_2	A7AP15	A7BP3	212-2271-002 ASSY CABLE I/O W40
W42_1	A7BP4	A7AP16	212-2273-001 ASSY CABLE DIATHERMY W42
W42_2	A7BP5	A7AP16	212-2273-001 ASSY CABLE DIATHERMY W42
W43	M1_FAN	M1P1	212-1586-001 CABLE ASSY FAN W43
W44_1	A3BP1	SW IP3	212-1587-001 CABLE ASSY W44 AC IN BREAKER
W44_2	A3BP1	A11ND3	212-1587-001 CABLE ASSY W44 AC IN BREAKER
W44_3	A3BP1	SW IP4	212-1587-001 CABLE ASSY W44 AC IN BREAKER
W46	A3AP4	A2BP19	212-1589-001 ASSY CABLE 24V DC W46
W47	A8AP5	A4AP1	212-2062-001 ASSY CABLE PNEU DIST W47
W48	A3AP18	A5AP301	212-2063-001 ASSY CABLE SUPERVISOR INF W48
W49	A4AP5	A4BP1	212-2131-001 CABLE I/O EXT ILLUM TT W49
W50_1	A6BP15	A6AP2	212-2198-001 ASSY CABLE ILLUM BALLAST TOP
W50_2	A6BP15	A6AP3	212-2198-001 ASSY CABLE ILLUM BALLAST TOP
W51	A6AP5	A6BP25	212-2196-001 ASSY CABLE ILLUM OPT INTFC
W52	A6AP4	A6CP1	212-2199-001 ASSY CABLE ILLUM RFID INTFC W52
W53_1	A3AP11	A3CPN1	212-2257-001 ASSY CABLE W53 PWR SUP CNTRL
W53_2	A3AP11	A3CPN3	212-2257-001 ASSY CABLE W53 PWR SUP CNTRL
W54	A3AP183	A3CP1B2	212-2258-001 ASSY CABLE W54 DC POWER MAIN
W55	A3AP5	A3CP BATT	212-2227-002 BATTERY POWER MODULE
W56	A3AP1	A3BP2	212-2260-001 ASSY CABLE W56 AC CONTROL
W57	A3BP3	A3CP1B1	212-2261-001 ASSY CABLE W57 AC POWER
W58	A2DP13	A2BP8	212-2381-001 ASSY CABLE ATX POWER W58
W59	A2BP11	A2BP1	212-2383-001 ASSY CABLE RIGHT SPEAKER
W60	A7BP9	A7BP1	212-2383-001 ASSY CABLE RIGHT SPEAKER
W61	A2DP19	A2BP2	022-183 CABLE ASSY SATA PWR W59/W60
W62	A2DP18	A2BP2	022-183 CABLE ASSY SATA PWR W59/W60
W63	A2JP1	A2BP10	212-2384-001 ASSY CABLE GND POWER W63
W64	A2DP16	A2JP2	212-2385-001 ASSY CABLE I/O SIGNAL W64
W66	A2DP11	A2AP5	212-2387-001 ASSY CABLE FRONT PANEL USB W66
W67	A2DP12	A2AP1	212-2388-001 CABLE ASSY LVDS SIGNAL W67
W68	A2BP17	A2AP4	212-2389-001 CABLE ASSY PWR FR PNL W68
W69	A2CP13	A2EP7	212-2390-001 CABLE ASSY SERIAL EXT W69
W70	A2CP15	A2EP2	212-2391-001 CABLE ASSY SERIAL EXT 12.5 W70
W71	A2CP14	A2BP16	212-2391-002 ASSY CABLE SERIAL EXT 16.0 W71
W72	A2EP6	A2EP6	212-2388-001 CABLE ASSY W72 EXT W72
W73	A2EP7	A2EP7	212-2393-001 CABLE ASSY THERM EXT W73
W74	A2EP8	A2EP8	212-2394-001 CABLE ASSY I/O PORT EXT W74
W75	A2EP2	A2EP12	212-2395-001 CABLE ASSY ARIO EXT W75/W76
W76	A2DP10	A2BP5	212-2395-001 CABLE ASSY ARIO EXT W75/W76
W77_1	A2CP15	A2EP11	212-2396-001 CABLE ASSY VIM SIGNAL EXT W77
W77_2	A2CP15	A2CP9	212-2396-001 CABLE ASSY VIM SIGNAL EXT W77
W78	A2EP10	A2EP10	212-2397-001 CABLE ASSY S-VIDEO IN/OUT W78
W79	A2DP21	A2CP9	212-2397-001 CABLE ASSY S-VIDEO IN/OUT W79
W80	A2BP13	ANT_J1	212-2389-001 ASSY CABLE PWR FR PNL W80
W81_1	A5AP302	A6EP4	212-2499-001 CABLE ASSY I/O CONTROL W81
W81_2	A6EP4	M2J1	212-2499-001 CABLE ASSY I/O CONTROL W81
W81_3	A6EP4	M3J2	212-2499-001 CABLE ASSY I/O CONTROL W81
W83	A6EP7	A3AP19	212-1561-002 CABLE ASSY 24V DC W83

REF DES	CONNECTION REF DES	ALCON PART NUMBER	DESCRIPTION
FROM	TO		
MODULE/CONNECTOR	MODULE/CONNECTOR		
W84	A9AP4	A9L_FAN	212-2598-001 CABLE ASSY FLUIDICS FAN
W85	A9AP7	A9P1	212-2293-001 CABLE ASSY CASSETTE ID W85
W86	A9AP6	A9BP1	212-2291-001 CABLE ASSY SUCTON CONTR W86
W87	A9CP3	A9BP1	023-495 CABLE FLAT IDC SOCKET 2MM
W88	A9AP1	A9CP1	212-2252-001 CABLE ASSY INF CON ROLLER W88
W89	A9BP4_5-6	PVB_PS_VALVE	212-2633-001 CABLE ASSY PROP VALVE SS
W90_1	A9AP2	A9BP1	212-2288-001 CABLE ASSY X-VALVE
W90_2	A9AP2	A9BP1	212-2288-001 CABLE ASSY X-VALVE
W90_3	A9AP2	A9BP1	212-2288-001 CABLE ASSY X-VALVE
W91	A9BP4_3-4	PVT_P_S_VALVE	212-2633-001 CABLE ASSY PROP VALVE SS
W92	A9BP4_1-2	PVT_P_R_VALVE	212-2632-001 CABLE ASSY PROP VALVE SS
W93	A9AP12	A9BP2	023-091 CABLE RIBBON 20 COND 20 INCH
W94	A9AP13	A9BP2	023-092 CABLE RIBBON 20 COND 20 INCH
W95_1	A9BP2	DST_SEN_SENSOR	212-2294-001 CABLE ASSY SMC CASS-REL W95
W95_2	A9BP2	L15_I_R	212-2294-001 CABLE ASSY SMC CASS-REL W95
W95_3	A9BP2	L16_I_S	212-2294-001 CABLE ASSY SMC CASS-REL W95
W96	A9BP3	MTB_P_S	212-2580-001 SENSOR PRESSURE ABS 300
W97	A9BP5	MTT_P_R	212-2579-001 SENSOR PRESSURE ABS 300
W98	A9BP6	D55_S_CU_SENSOR	212-2292-001 CABLE ASSY CASS IN SENSOR W98
W99	A9BP8	EST_S_L_C_SENSOR	212-2272-001 CABLE ASSY LATCH PIS W99
W101	A9EP2	A10P1	212-1873-001 CABLE ASSY DISPLAY, BLT INVERT
W102	A9EP2	A10P1	212-3401-001 CABLE ASSY BLT INVERT

DESIGNATION	SUBASSEMBLY
A1	DISPLAY
A1A	CO
A1B	DISPLAY CHASSIS
A1C	DISPLAY INTERFACE
A1D	BACKLIGHT INVERTER
A1E	IR SENSOR RIGHT
A1F	IR SENSOR LEFT
A1G	CARD READER
A2	HOST
A2A	HOST DISPLAY PCBA
A2B	HOST I/O EXT PCBA
A2C	UPPER EXPANSION PANEL PCBA
A2D	MOTHERBOARD
A2E	LOWER EXPANSION PANEL PCBA
A2F	FAN
A2G	UPPER HDD
A2H	LOWER HDD
A2J	DVD
A3	POWER CONTROL
A3A	POWER CONTROLLER BOARD
A3B	AC BOARD
A3C	POWER SUPPLY
A3D	BATTERY
A3E	SYSTEM GROUND
A3F	SYSTEM GROUND
A4	PNEUMATIC DISTRIBUTION
A5	SUPERVISOR
A6	TABLETOP ILLUMINATOR
A6A	TABLE TOP ILLUMINATOR CONTROLLER
A6B	BALLAST AND OPTICAL MODULE
A6C	ILLUMINATOR RFID CONTROL
A6D	BALLAST PCBA
A6E	TT ILLUMINATOR INTERFACE PCBA
A6F	MOTOR
A6G	MOTOR
A6H	OPTICS PCBA
A6J	HOME SENSOR 1 PCBA
A6K	HOME SENSOR 2 PCBA
A6L	SENSOR

DESIGNATION	SUBASSEMBLY
A7	U/S DIATHERMY
A7A	U/S DIATHERMY PCBA
A7B	FACEPLATE
A7C	RING ILLUMINATION PCBA
A7D	FAN
A7E	FAN
A8	PNEUMATIC
A8A	PNEUMATICS PCBA
A8B	PNEUMATICS TRANSDUCER INTERFACE PCBA
A8D	RFID PCB
A8E	X VALVE GAS PCB
A8F	X VALVE AIR PCB
A9	FLUIDICS
A9A	FLUIDICS CONTROLLER
A9B	SUCTON PCBA
A9C	INFUSION PCBA
A9D	INFUSION LIGHT PCBA
A9E	SUCTON LIGHT PCBA

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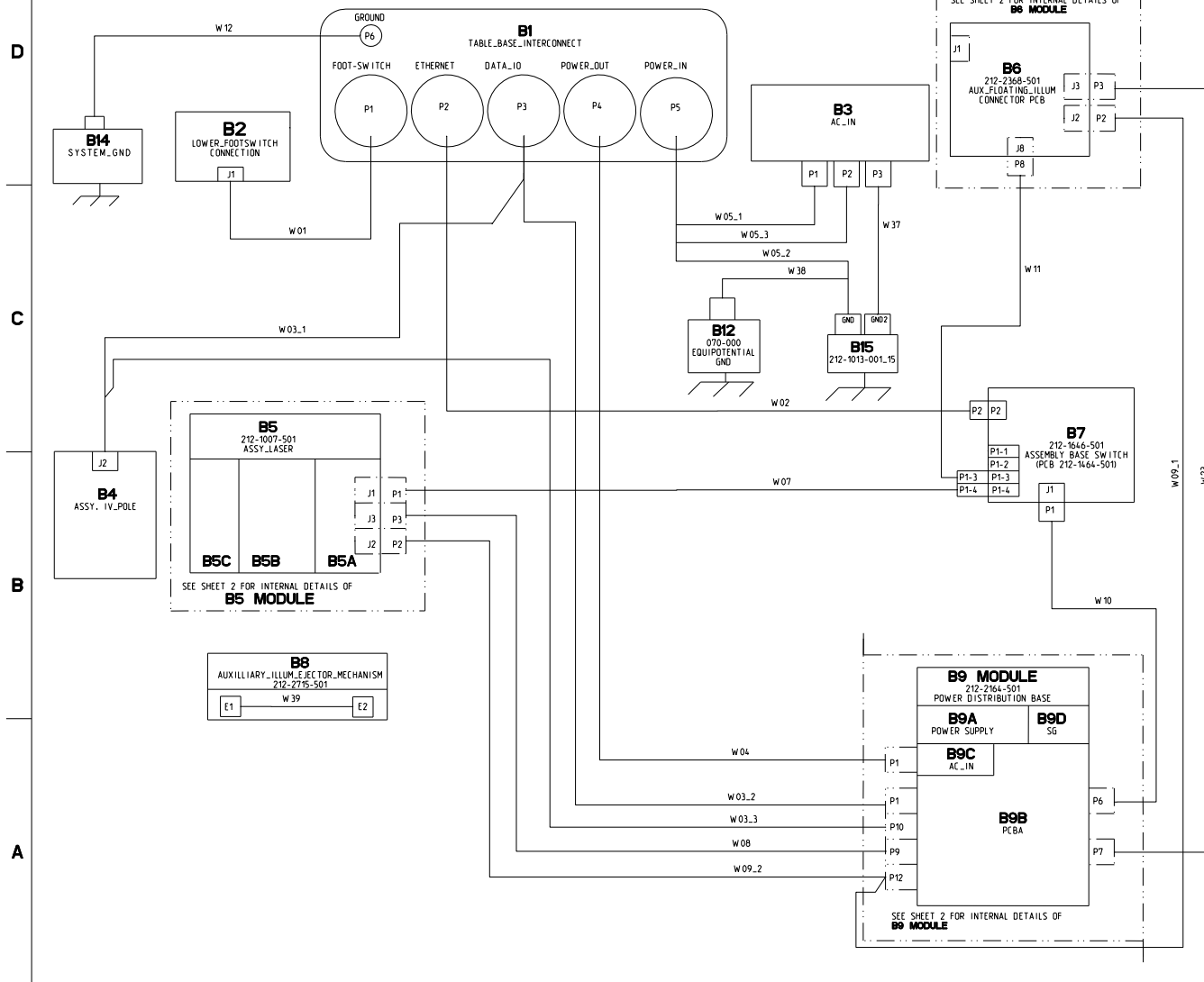
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NOTES: UNLESS OTHERWISE SPECIFIED

- PARTS THAT HAVE MORE THAN ONE PART NUMBER AND POTENTIAL COMPATIBILITY ISSUES ARE LISTED IN TABLE 1. THESE ARE NOTED ON THE DRAWING WITH A LETTER DESIGNATION IN PARENTHESIS.

REVISION HISTORY

REV	ECN	DATE
P21	NOT RELEASED	04/18/08
A	20081154	04/28/08
B	20101755	10/21/10
C	CN033330ECN	08/16/12



REF DES	CONNECTOR FROM	REF DES TO	ALCON PART NUMBER	DESCRIPTION
W01	B1P1	B2J1	212-1678-001	CABLE, W01, FOOT SWITCH
W02	B1P2	B7P2	212-1560-009	CABLE, W02, ETHERNET
W03.1	B1P3	B4J2	212-1680-001	CABLE, W03, DATA IO
W03.2	B1P3	B9BP1	212-1680-001	CABLE, W03, DATA IO
W03.3	B4J2	B9BP10	212-1680-001	CABLE, W03, DATA IO
W04	B1P4	B9CP1	212-1681-001	CABLE, W04, POWER_OUT
W05.1	B1P5	B3P1	212-2201-001	CABLE, W05, AC POWER_IN
W05.2	B1P5	B15GND	212-2201-001	CABLE, W05, AC POWER_IN
W05.3	B3P2	B1P5	212-2201-001	CABLE, W05, AC POWER_IN
W07	B7P1.4	B5AP1	212-1560-007	CABLE, W07, ETHERNET
W08	B5AP3	B9BP9	212-1561-008	CABLE, W08, 24V DC
W09.1	B6BP2	B9BP12	212-1689-001	CABLE, W09, SLOT ID
W09.2	B9BP12	B5AP2	212-1689-001	CABLE, W09, SLOT ID
W10	B7P1	B9BP6	212-1561-009	CABLE, W10, 24V DC
W11	B6BP8	B7P1.3	212-1560-006	CABLE, W11, ETHERNET
W12	B14SG	B1P6	212-2019-001	EQUI GROUND CABLE
W14	B9BP3.2	B9AP2.2	212-2220-001	CABLE, W14, DC POWER
W15	B9AP1B1	B9CJ1	212-2221-001	CABLE, W15, AC IN
W16.1	B9BP4	B9APEN1	212-2222-001	CABLE, W16, PS CONTROL
W17	B9BE1	B9BP2	212-2223-001	CABLE, W17, GROUND
W19	B5AP4	B5CP1	212-1996-001	CABLE, W19, LASER INTERFACE
W20	M2FAN	B6AP8	212-2268-002	CABLE, W20, FAN OPTICS
W21.2	B6DJ5	B6DAP2	212-2655-001	CABLE, W21, BALLAST INTERFACE
W21.1	B6DJ5	B6DJ3	212-2655-001	CABLE, W21, BALLAST INTERFACE
W21.3	B6DJ5	B6DP1	212-2655-001	CABLE, W21, BALLAST INTERFACE
W23	B6BP3	B9BP7	212-1561-010	CABLE, W23, 24V DC
W24	B6DP7	B6AP5	212-2196-001	CABLE, W24, ILLUM OPT INTF
W25.1	B6DP15	B6AP2	212-2198-002	CABLE, W25, BALLAST INTERFACE
W25.2	B6DP15	B6AP7	212-2198-002	CABLE, W25, BALLAST INTERFACE
W26	B6AP4	B6CP1	212-2199-001	CABLE, W26, AUX ILLUM RFID
W27	B6DJ5	B6DJ7	212-2657-001	CABLE, W27, FLEX AUX ILLUM
W28	B6DP1	B6DP1	212-2658-001	CABLE, W28, HOME POS. SENSOR
W29	B6DP1	B6DP2	212-2658-001	CABLE, W29, HOME POS. SENSOR
W30	MSFAN	B6DP4	212-2656-001	CABLE, W30, STEPPER MOTOR
W31	MSFAN	B6DP3	212-2656-001	CABLE, W31, STEPPER MOTOR
W32	B6DP6	B6D5GND	212-2623-001	CABLE, W32, THERMAL SENSOR
W33	MSFAN	B6AP6	212-2267-003	CABLE, W33, FAN BALLAST
W34	B6CP2	F0DP1	212-3000-001	CABLE, W34, FIBER DETECT
W35	B6CP3	F0DP1	212-3000-001	CABLE, W35, FIBER DETECT
W36	B6BPMH1	B13SG	212-2223-004	CABLE, W36, GROUND
W37	B3P3	B15GND2	212-2832-001	CABLE, W37, GROUND
W38	B15GND	B12SG	212-2833-001	CABLE, W38, GROUND
W39	B8E1	B8E2	212-2957-001	CABLE, W39, GND/AUX ILLUM EJECTR
W40	B9BP3	B9AP2	212-2220-002	CABLE, W40, DC POWER BLACK
W41	B5BP2	L10	212-2685-001	CABLE, W41, ILLUM
W42	B5BP3	KEYSWITCH	212-2686-001	CABLE, W42, KEYSWITCH
W43	B5BJ2	ESTOP	212-2663-001	CABLE, W43, ESTOP

ITEM	DESCRIPTION	PART NUMBER	NOTES
(A)	ILLUMINATOR RFID PCB	212-1630-501 212-3200-501	INTERCHANGEABLE, 212-3200-501 REPLACED 212-1630-501, CUT IN APPROX APRIL 2009 REFERENCE ECN20090616.
(B)	ATTENUATOR HOME SENSOR PCB	212-2413-501 212-2415-502	INTERCHANGEABLE, 212-2413-502 REPLACED 212-2413-501, CUT IN APPROX JUNE 2011, REFERENCE ECN 20110863.
(C)	ILLUMINATOR CABLE I/F PCB	212-1974-501 212-3336-501	212-3336-501 REPLACED 212-1974-501, BUILT IN AUX ILLUMINATOR KITS 8065751452, SERIAL NUMBER 1101919301X AND ABOVE, REFERENCE ECN 20110863.

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	HUNG NGUYEN	DATE	08/10/05	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT PERMISSION OF ALCON.
CHECKED	M. ESCALANTE	DATE	08/10/05	DESCRIPTION
DESIGNED	M. KOSMALA	DATE	08/10/05	DIAGRAM, INTERCONNECT, NGVS BASE
FORMAT REVISION	6/30/2005	NAME	NONE	SCALE: NONE
PDM LINK MODEL ATTRIBUTES	NAME: NONE	VERSION:	C.2	SHEET 1 OF 2

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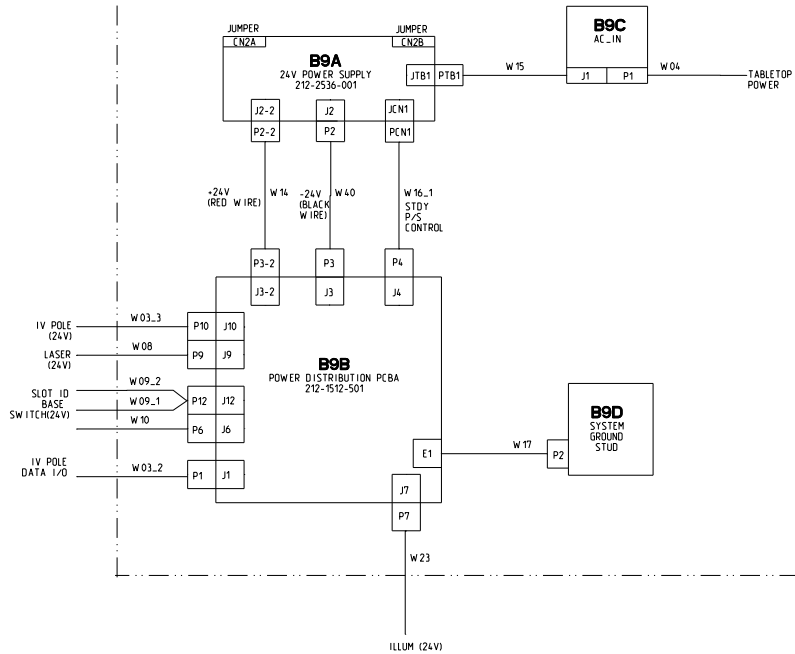
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B

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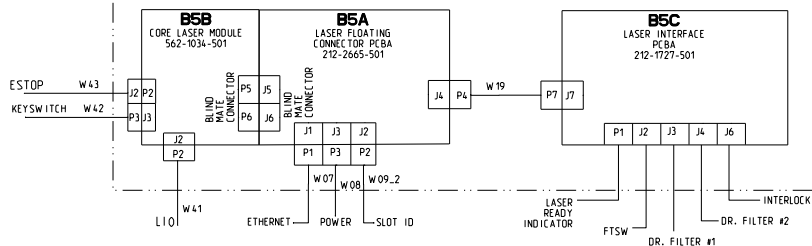
B9 POWER DISTRIBUTION MODULE

212-2164-501
(CONTINUED FROM SHEET 1)



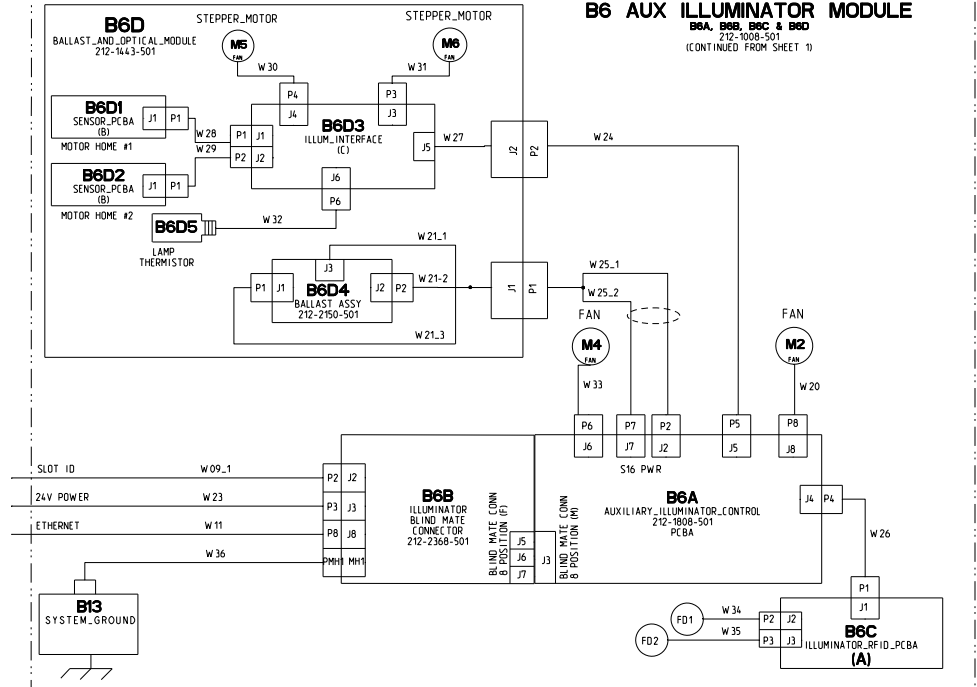
B5 LASER INTERFACE MODULE

212-1007-501
(CONTINUED FROM SHEET 1)



B6 AUX ILLUMINATOR MODULE

B6A, B6B, B6C & B6D
212-1008-501
(CONTINUED FROM SHEET 1)



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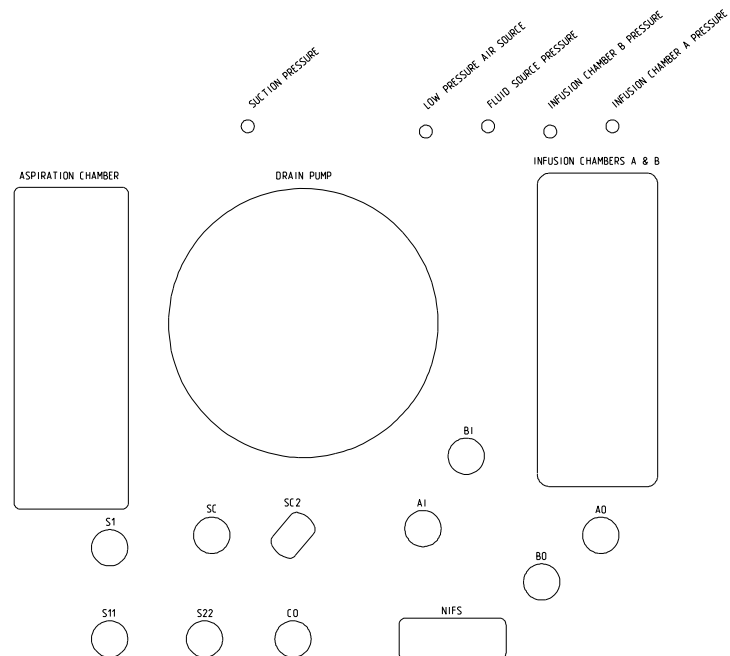
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NOTES: UNLESS OTHERWISE SPECIFIED
1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.

REVISION HISTORY		
REV	ECN	DATE
P1	NOT RELEASED	12/21/07
A	20080088	01/21/08

COMPONENT DESCRIPTION TTNN FF LL					
TT, TYPE	LAST USED	NOT USED	NN, NUMBER	FF, FUNCTION	LL, LOCATION
AC = ACCUMULATOR	AC4	--	1	F = FLOW	A (I) (O) = INFUSION CIRCUIT A (IN) (OUT)
CV = CHECK VALVE	CV1	--	2	I = ISOLATION	B (I) (O) = INFUSION CIRCUIT B (IN) (OUT)
CY = CYLINDER	CY12	--	3	IN = INTAKE	BA = INFUSION BACKUP
DS = INTERRUPT SENSOR	DS7	--	ETC	L = LEVEL	CO = IRRIGATION
ES = HALL EFFECT SENSOR	ES1	--		P = PRESSURE	C (L) (U) (R) = CASSETTE (LWR) (UPR) (RELEASE)
L = SOLENOID VALVE	L20	--		S = POSITION	D = DRAIN PUMP
MF = MUFFLER	MF2	--		V = VENT	E = SOURCE PRESSURIZATION
MT = MEASURING TRANSDUCER	MT12	--			F = F/AX
P = PUMP	P2	--			I = INFUSION SUPPLY
PV = PROPORTIONAL VALVE	PV9	--			L (O) (C) = LATCH (OPEN) (CLOSED)
RG = REGULATOR	RG5	--			N = NIFS
RO = RESTRICTIVE ORIFICE	RO2	--			P = PINCHER SUPPLY
RV = RELIEF VALVE	RV3	--			R = REFLEX
T = TUBING	T7	--			S = SUCTION
TP = TEST POINT	TP5	--			SC = CROSS CONNECTION
V = VENTURI	V1	--			SY = SYSTEM SUPPLY

	CYLINDER, DOUBLE ACTING, MAGNETIC		VALVE, CHECK		ENERGY SOURCE
	CYLINDER, SINGLE ACTING, NORMALLY RETRACTED		VALVE, RELIEF		ELECTRIC MOTOR
	CYLINDER, SINGLE ACTING, NORMALLY EXTENDED		VALVE, CHECK, SELF SEALING		PUMP
	SENSOR, PRESSURE		REGULATOR, REDUCING, RELIEVING		VENTURI
	SENSOR, HALL EFFECT		REGULATOR, BACK PRESSURE		ORIFICE
	SENSOR, PHOTO INTERRUPT, PLUNGER ACTIVATED		VALVE, 2 POSITION, 3 WAY, SOLENOID OPERATED		ACCUMULATOR
	SENSOR, PHOTO INTERRUPT, PUSH BUTTON ACTIVATED		VALVE, PROPORTIONAL, NORMALLY CLOSED		MUFFLER
	SENSOR, LEVEL, PHOTO INTERRUPT		VALVE, PROPORTIONAL, NORMALLY OPEN		FITTING, SLIP
	SENSOR, FLOW, NON-INVASIVE				FITTING, BARB
			EXHAUST		CLOSED PATH



FACEPLATE INTERFACE

QTY		PART NUMBER		DESCRIPTION		MATERIAL/MANUFACTURER		ITEM	
BILL OF MATERIAL									
BY		HDA N.		DATE		03/13/07		<div>DESCRIPTION</div> <div>DIAGRAM.SYSTEM.FLUIDICS NGVS</div> <div>SIZE</div> <div><div>REV</div><div>D</div><div>212-1445-801</div><div>A</div></div> <div>SCALE: NONE</div> <div>SHEET 1 OF 5</div> <div>VERSION: A.1</div>	
CHECKED		M.ESCALANTE		DATE		03/13/07			
APPROVED		D.WILLIAMS		DATE		03/13/07			
FORMAL REVISION		6/30/2005							
PDM LINK MODEL ATTRIBUTES				NAME: NA					
				<div>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.</div> <div>Alcon</div> <div>Irwin, California 92018</div>					

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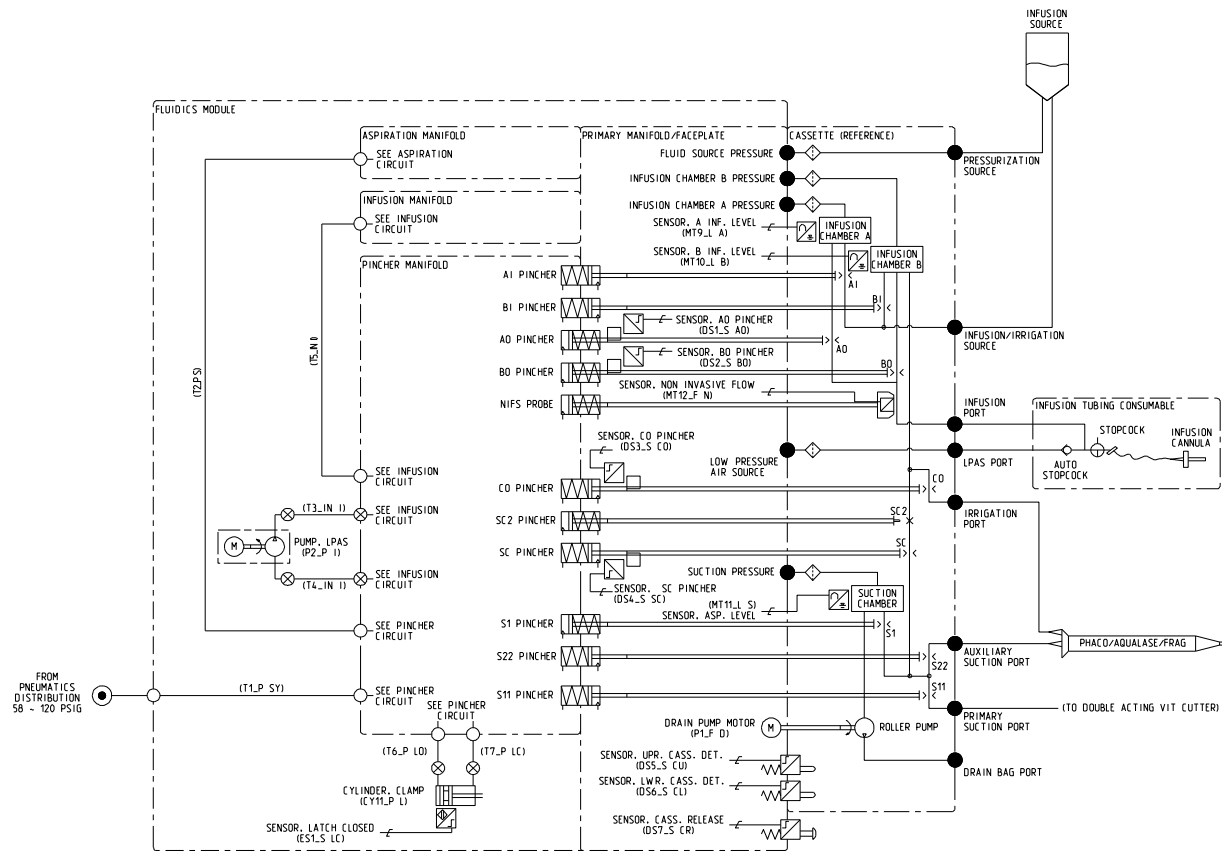
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EXTERNAL CONNECTIONS

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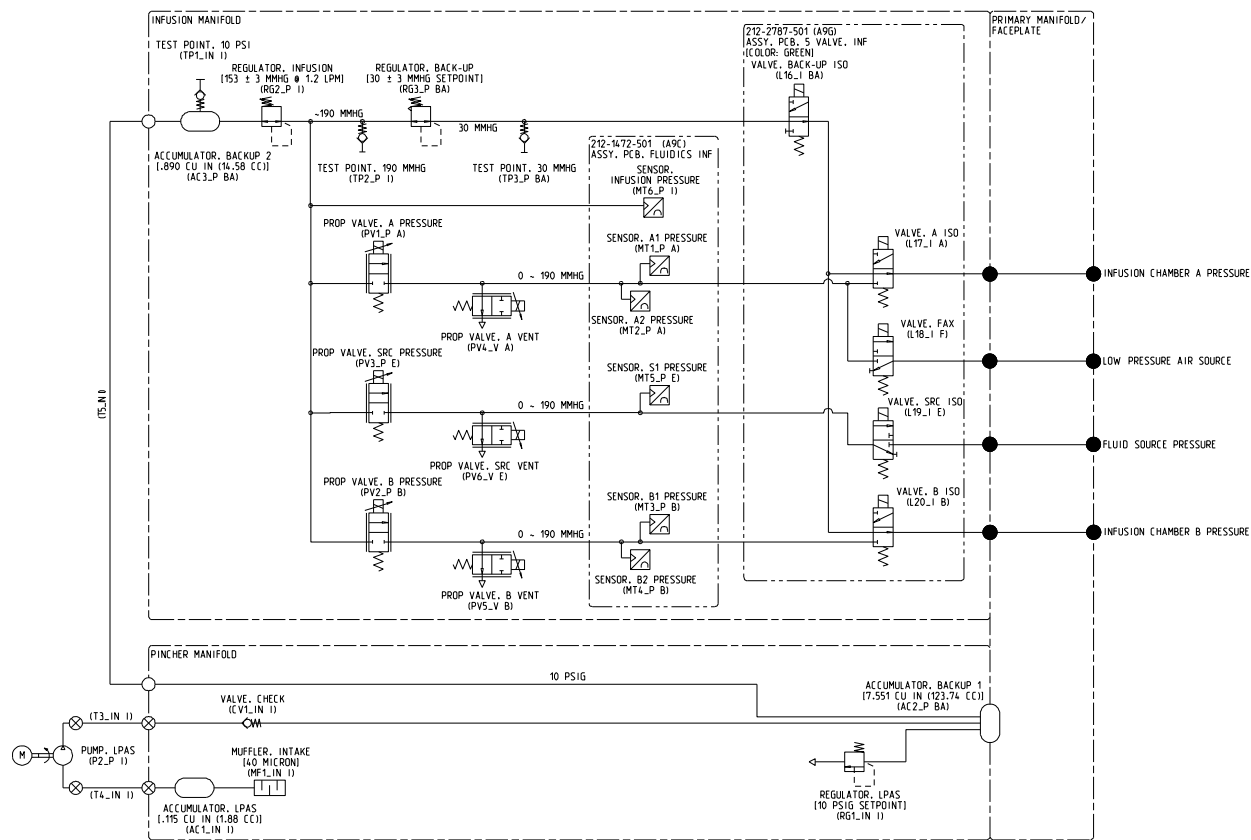
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INFUSION CIRCUIT

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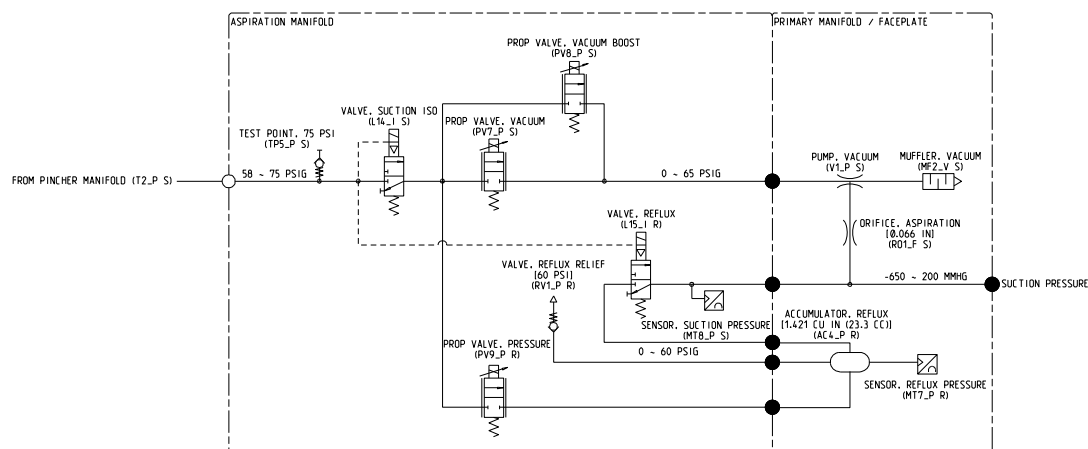
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ASPIRATION CIRCUIT

REV	D	DRAWING NUMBER	212-1445-801	REV	A
SCALE: DRAWING SCALE			SHEET 4 OF 5		

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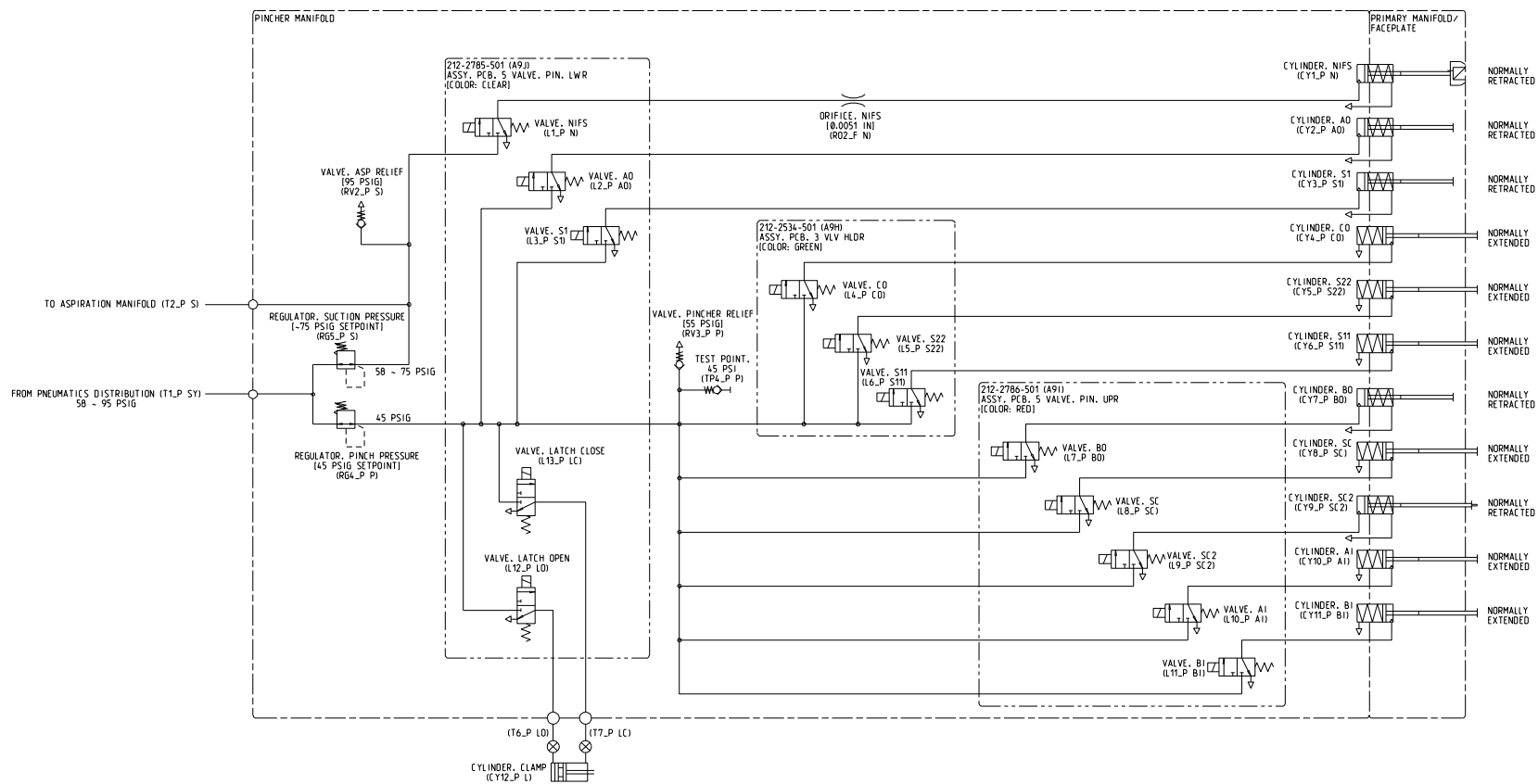
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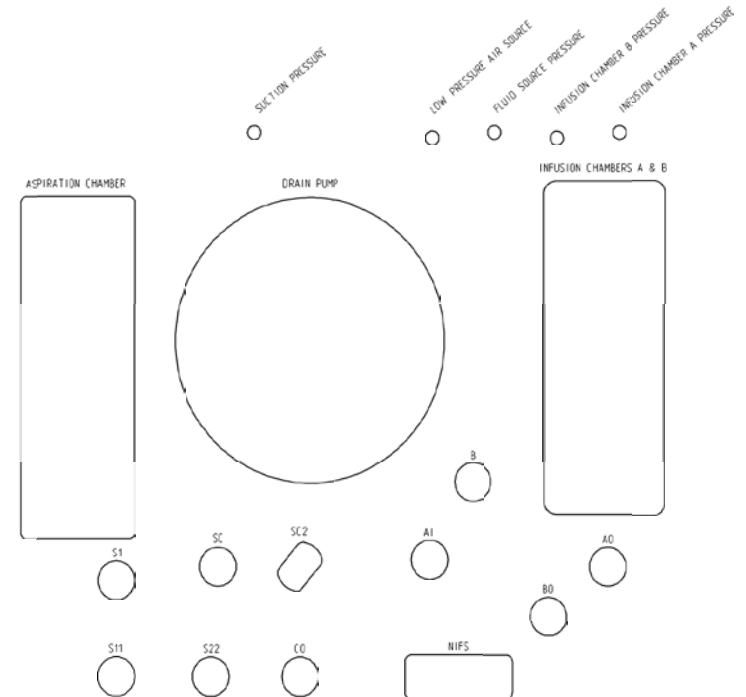
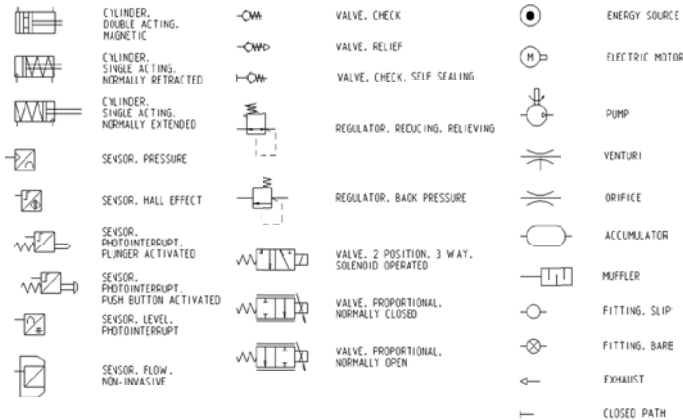
2

1

NOTES: UNLESS OTHERWISE SPECIFIED
1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.

REVISION HISTORY		
REV	ECN	DATE
P2	NOT RELEASED	07/28/09
A	20091489	08/18/09
B	CN03333DEC V	08/17/12

COMPONENT DESCRIPTION TTNN.FF LL					
TT, TYPE	LAST USED	NOT USED	NN, NUMBER	FF, FUNCTION	LL, LOCATION
AC = ACCUMULATOR	AC4	--	1	F = FLOW	A (11) (0) = INFUSION CIRCUIT A (1N) (0UT)
CV = CHECK VALVE	CV1	--	2	I = ISOLATION	B (11) (0) = INFUSION CIRCUIT B (1N) (0UT)
CY = CYLINDER	CY2	--	3	IN = INTAKE	BA = INFUSION BACKUP
DS = INTERRUPT SENSOR	DS7	--	ETC	L = LEVEL	CD = IRRIGATION
ES = HALL EFFECT SENSOR	ES1	--		P = PRESSURE	C (11) (0) (R) = CASSETTE (LWR) (UPR) (RELEASE)
L = SOLENOID VALVE	L20	--		S = POSITION	D = DRAIN PUMP
MF = MUFFLER	MF2	--		V = VENT	E = SOURCE PRESSURIZATION
MT = MEASURING TRANSDUCER	MT12	--			F = F/AX
P = PUMP	P2	--			I = INFUSION SUPPLY
PV = PROPORTIONAL VALVE	PV9	--			L (0) (C) = LATCH (OPEN) (CLOSED)
RS = REGULATOR	RS5	--			N = NIFS
RO = RESTRICTIVE ORIFICE	RO2	--			P = PINCHER SUPPLY
RV = RELIEF VALVE	RV3	--			R = REFUX
T = TUBING	T7	--			S = SUCTION
TP = TEST POINT	TP5	--			SL = CROSS CONNECTION
V = VENTURI	V1	--			SY = SYSTEM SUPPLY



QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
1	J.ATHERLEY	DATE 05/21/09	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE DISCLOSED OR TRANSMITTED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF ALCON.	
1	M.ESCALANTE	DATE 05/21/09	ALCON	
1	M.STAUDER	DATE 05/21/09	212-3245-801	
1	6/30/2005	DATE	SCALE: NONE SHEET 1 OF 5	
PDM LINK MODEL ATTRIBUTES		NAME: NA	VERSION: B.2	

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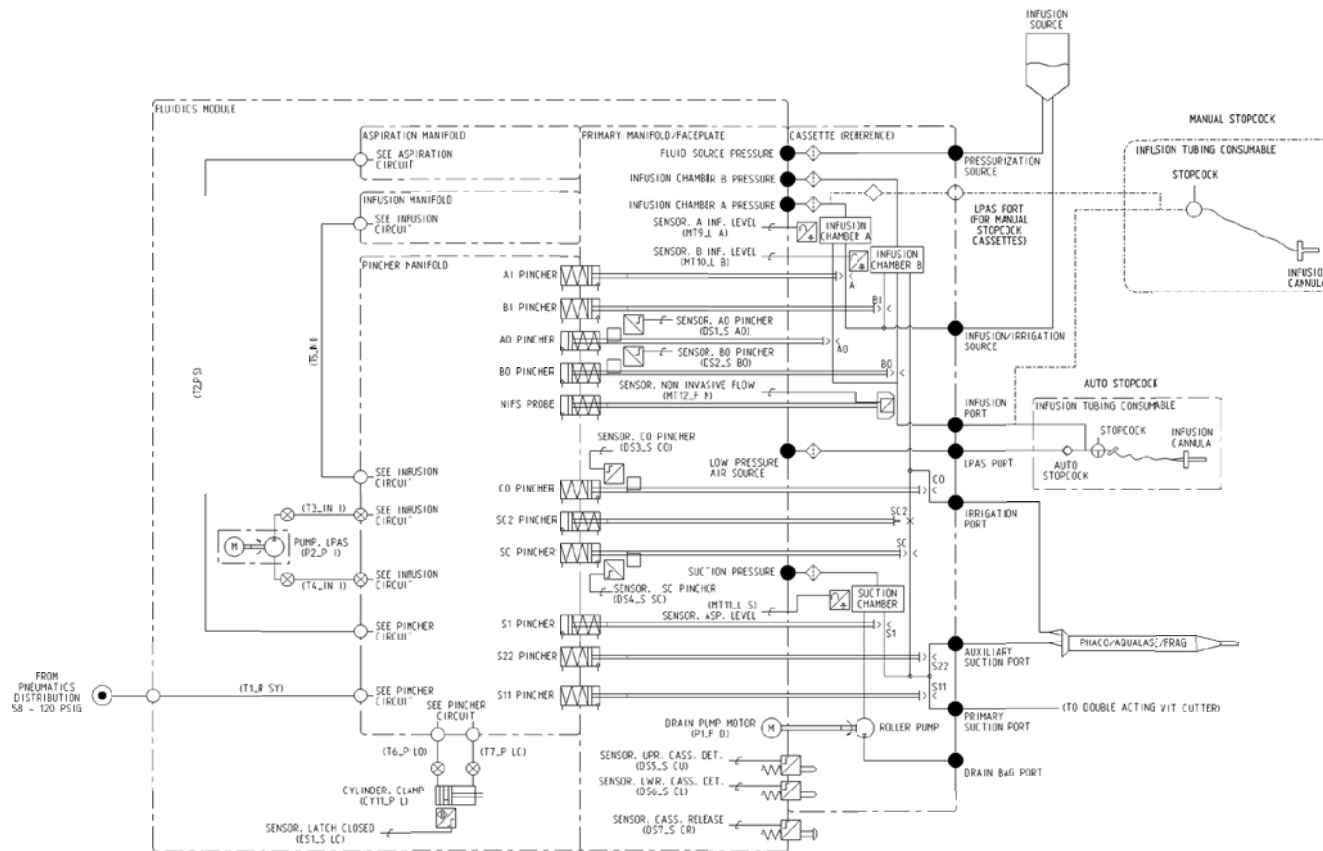
1

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EXTERNAL CONNECTIONS

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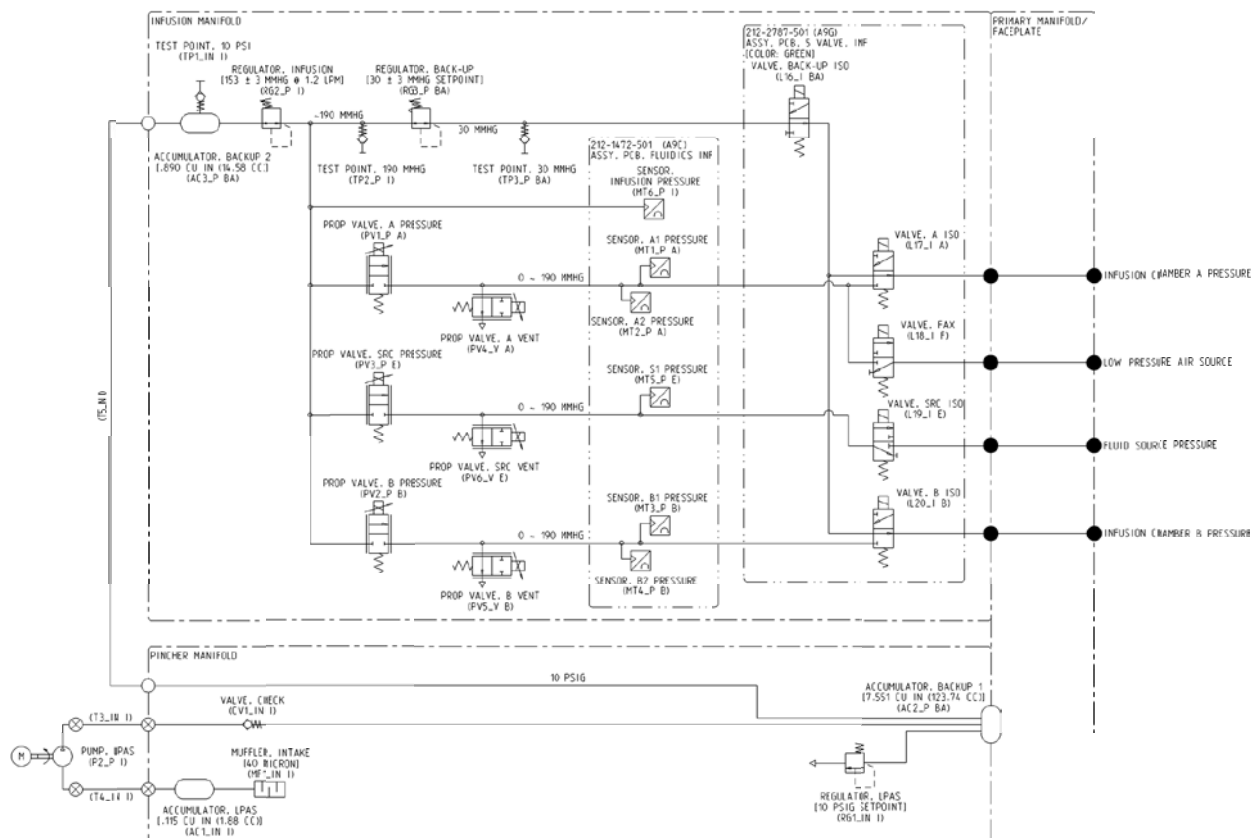
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INFLUSION CIRCUIT

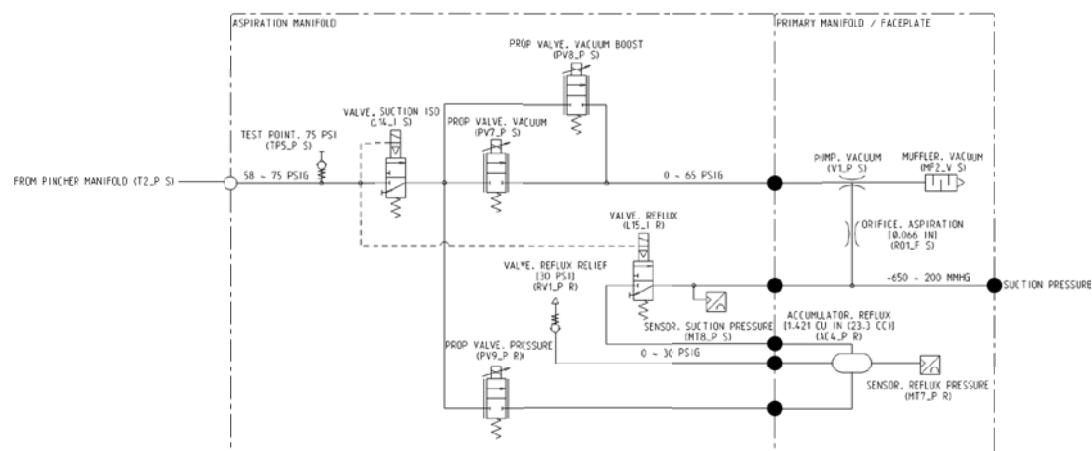
REV	D	212-3245-801	B
SCALE: DRAWING SCALE	SHEET 3 OF 5		

D

C

B

A



ASPIRATION CIRCUIT

REV	D	REVISED BY	212-3245-801	REV	B
SCALE: DRAWING SCALE			SHEET 4 OF 5		

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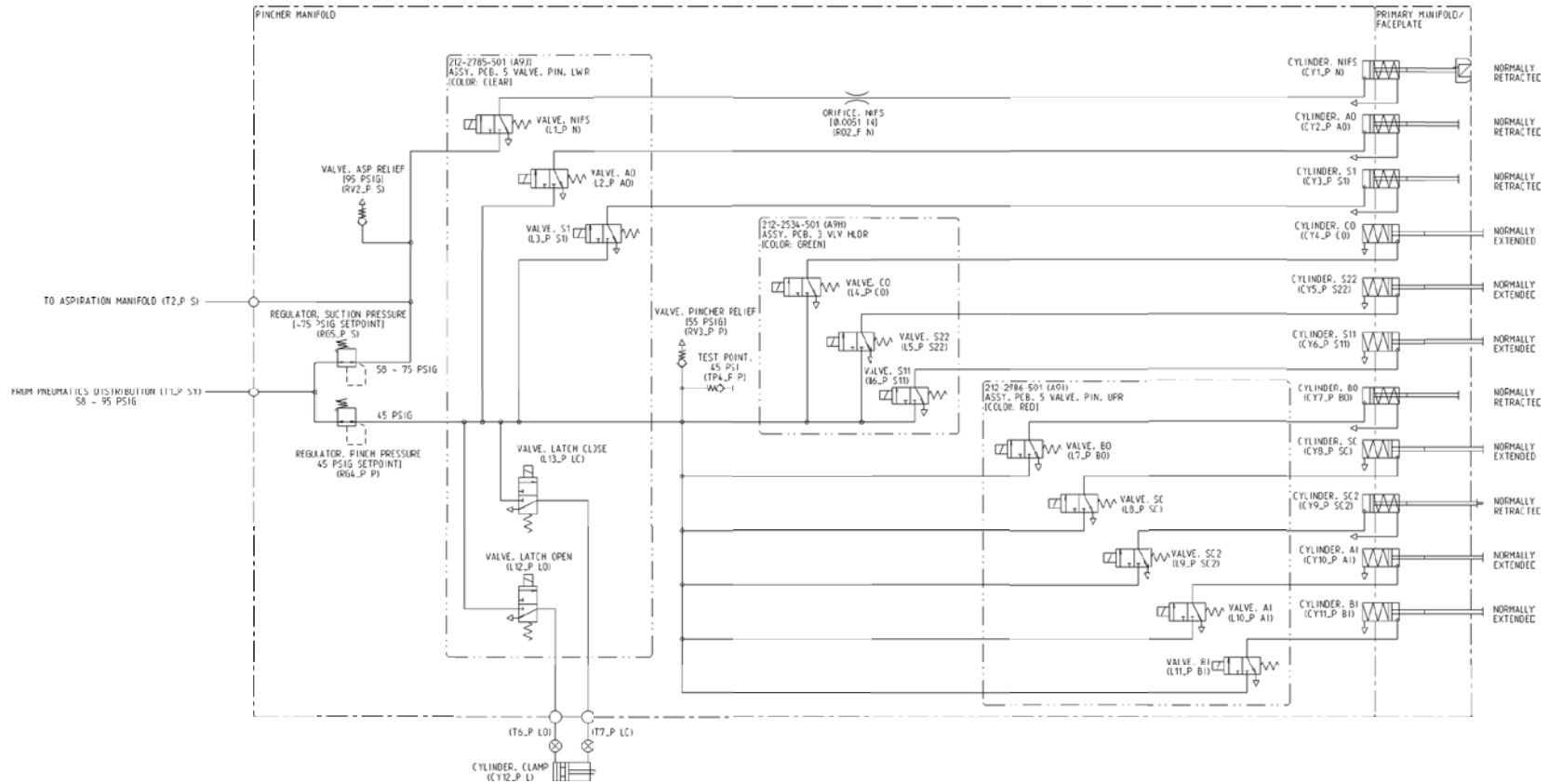
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PINCHER CIRCUIT

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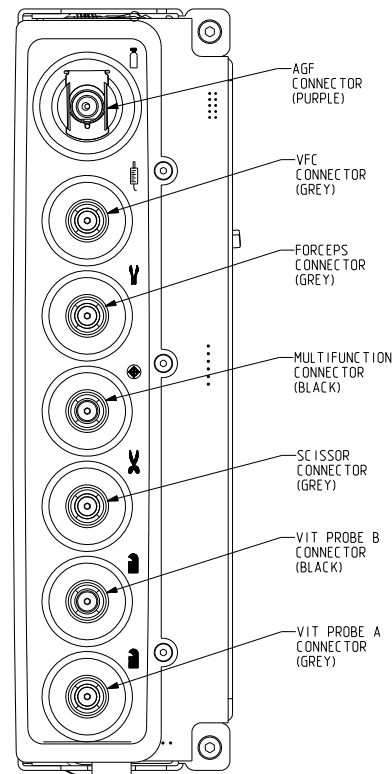
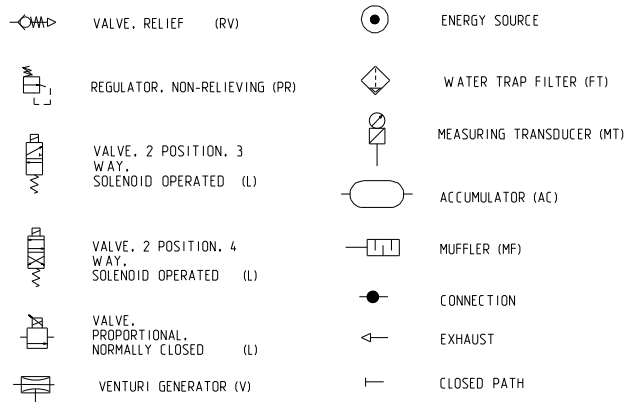
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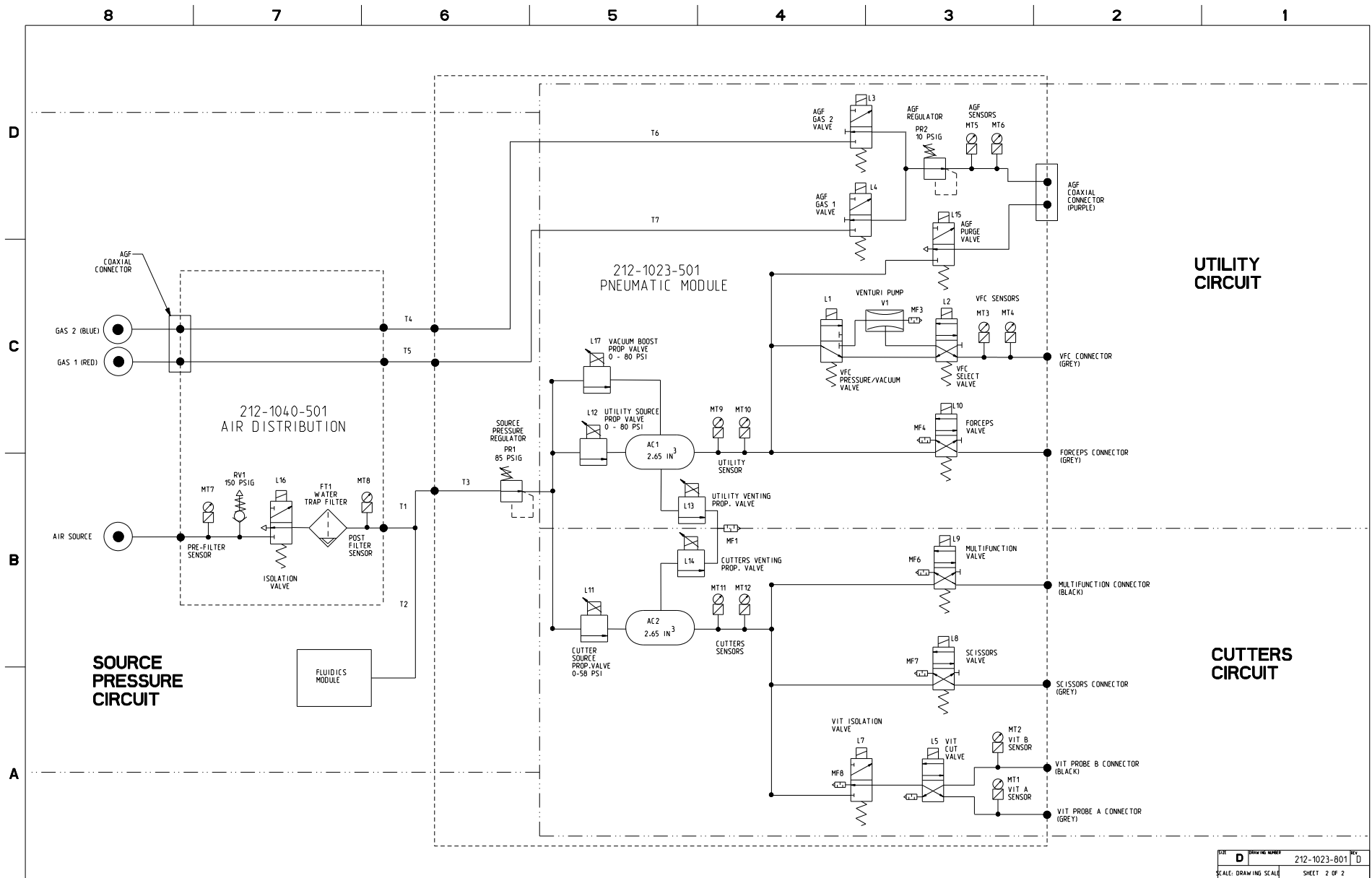
NOTES: UNLESS OTHERWISE SPECIFIED
1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.

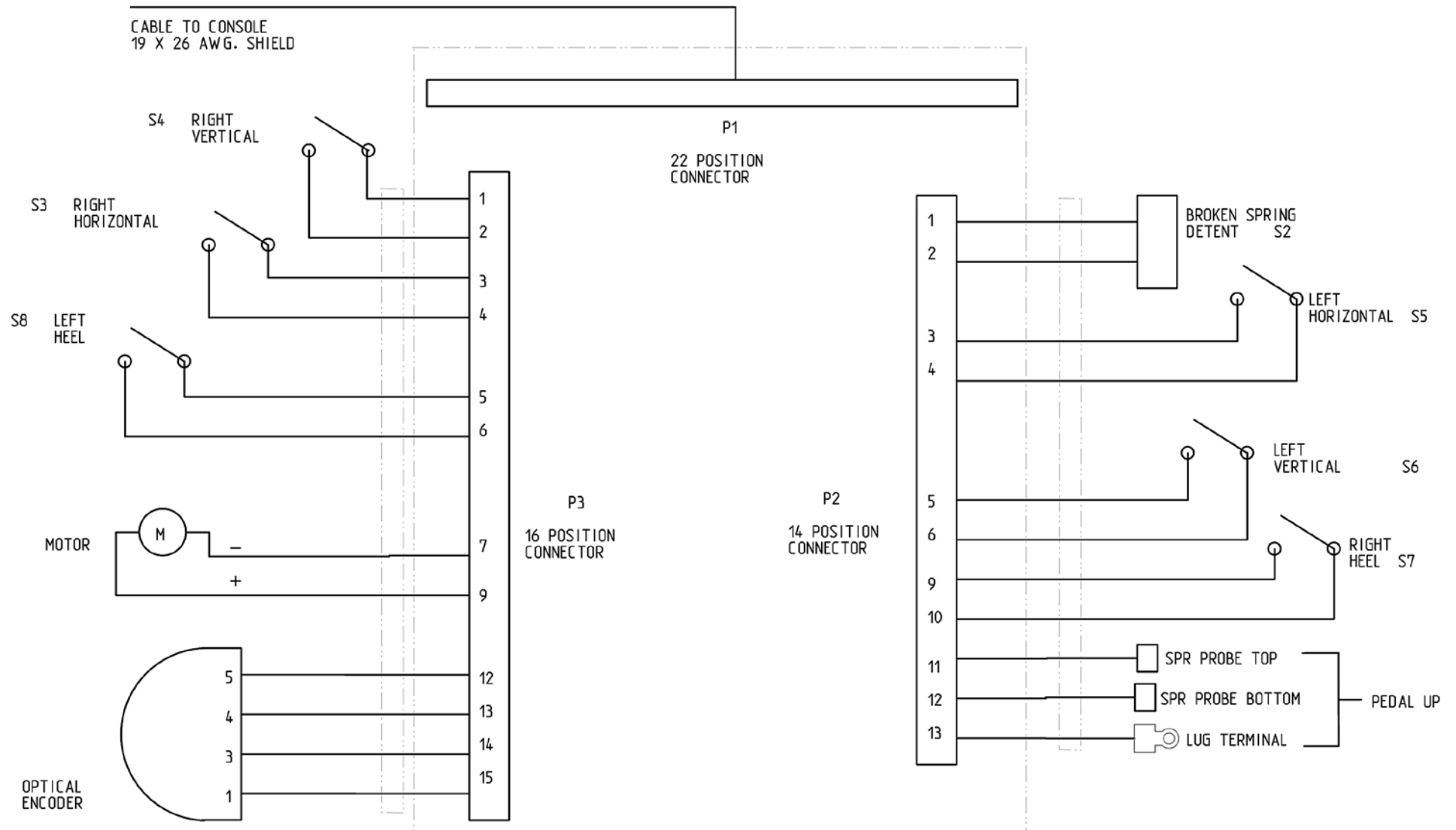
REVISION HISTORY		
REV	ECN	DATE
P0	NOT RELEASED	08/06/08
A	20082114	08/12/08
B	20090634	04/17/09
C	20101660	10/01/10
D	CN03330ECN	08/16/12

COMPONENT TYPE	QTY USED
AC = ACCUMULATOR	2
L = SOLENOID PROPORTIONAL VALVE	16
MF = MUFFLER	9
MT = MEASURING TRANSDUCER	12
PR = PRESSURE REGULATOR	2
RV = RELIEF VALVE	1
T = TUBING	7
FT = FILTER	1
V = VENTURI GENERATOR	1



QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	R.PALING	DATE	08/06/08	
CHECKED	J.MUELLER	DATE	08/06/08	
APPROVED	D.TURNER	DATE	08/06/08	
FORMIT REVISION	6/30/2005			
PDMLINK MODEL ATTRIBUTES		NAME: NONE	VERSION: D.2	





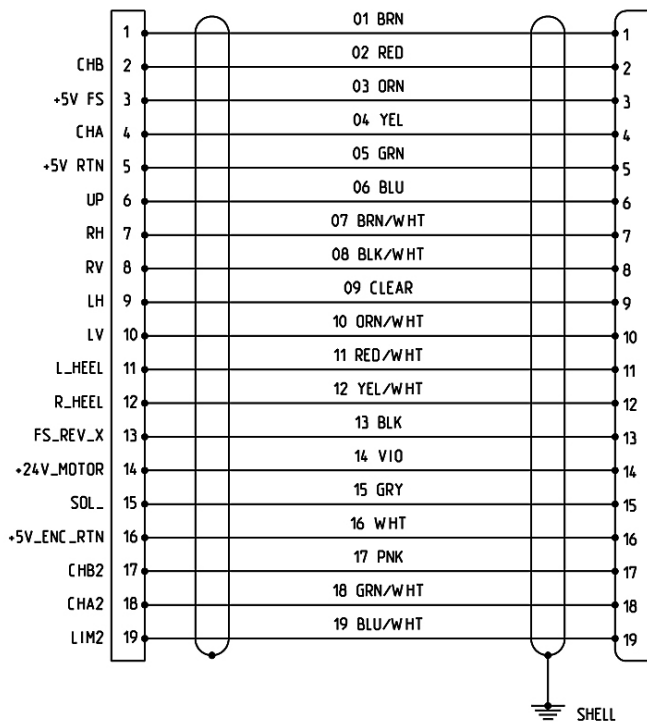
212-1083-501

Footswitch

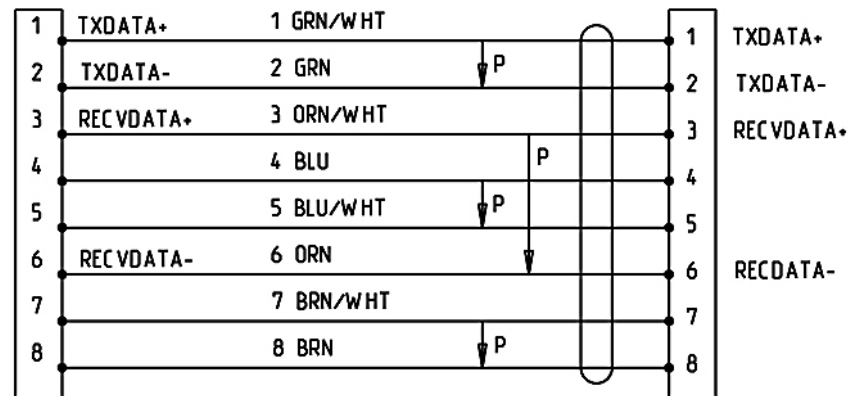
LOWER FOOTSWITCH CONNECTION B2J1

11

FOOTSWITCH INTERCONNECT TABLE BASE B1P1

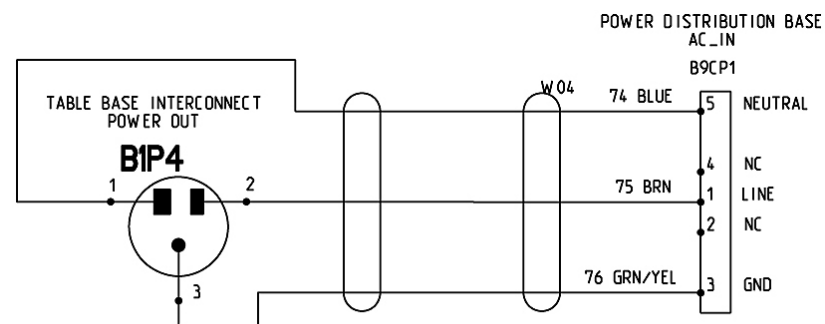


W01 - Base 212-1678-001 Cable, Footswitch



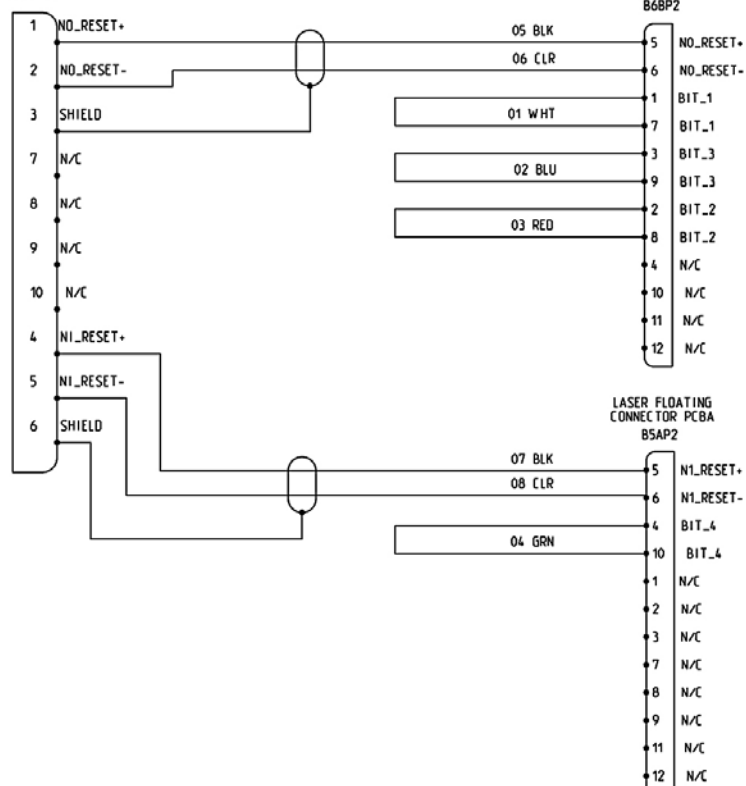
W17, 20, 21, 24, 27 - Console 212-1560-xxx Cable, Ethernet

W02, 07, 11 - Base



W04 - Base 212-1681-001 Cable, Power Out

POWER DISTRIBUTION
BASE PCBA
B9BP12



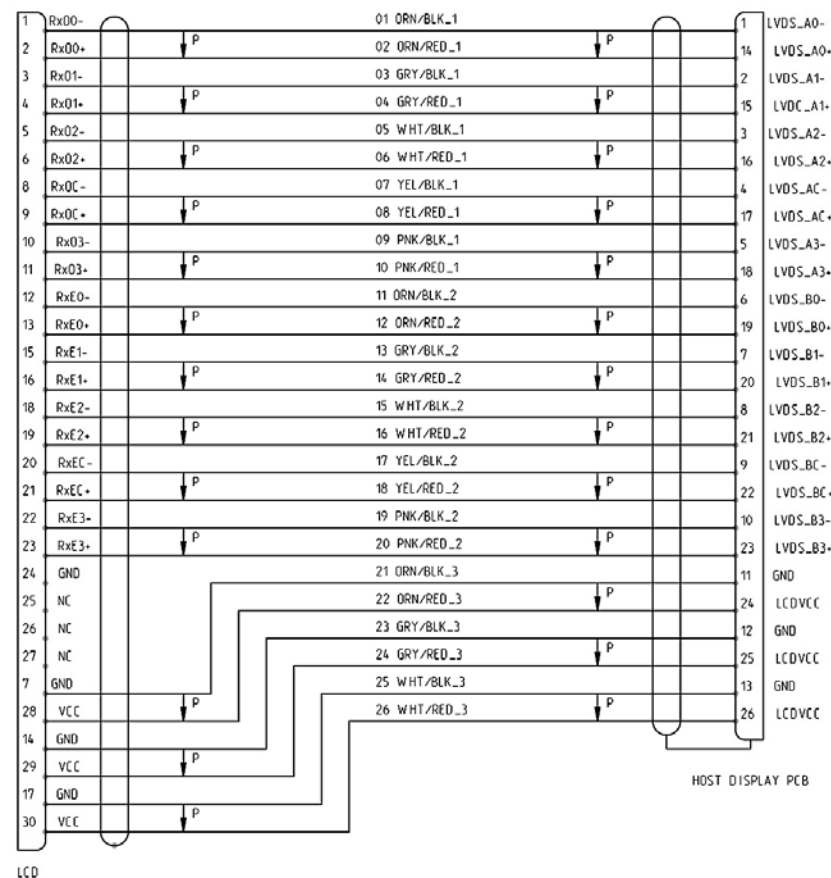
W09 - Base 212-1689-001 Cable, Slot ID



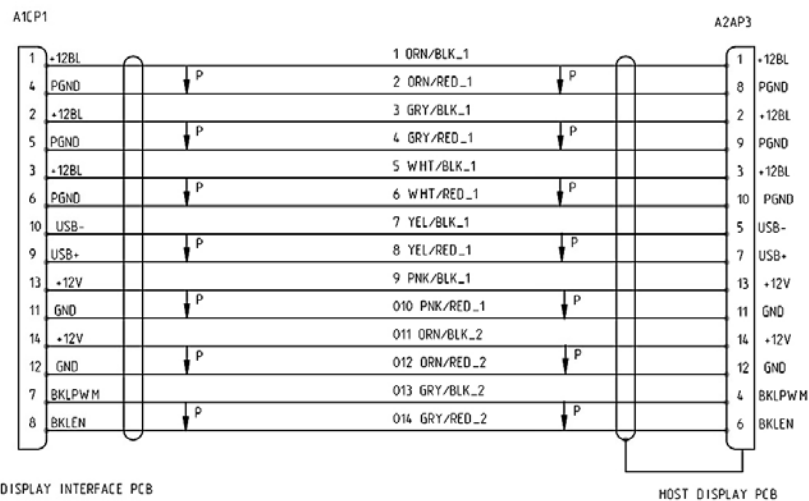
W12 - Base 212-2019-001 Cable, Ground Equi

A1AP1

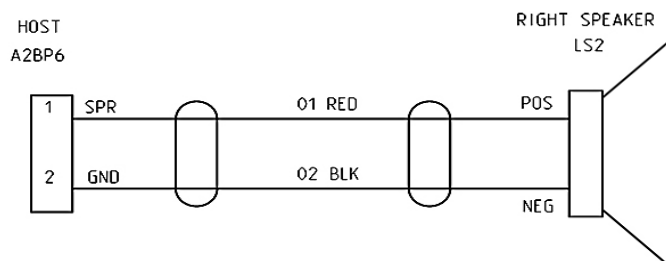
A2AP2



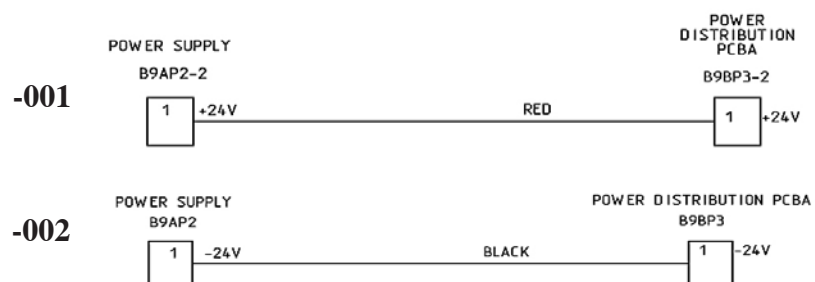
W12 - Console 212-1871-001 Cable, Video, LVDS



W13 - Console 212-1872-001 Cable, Interface, Display



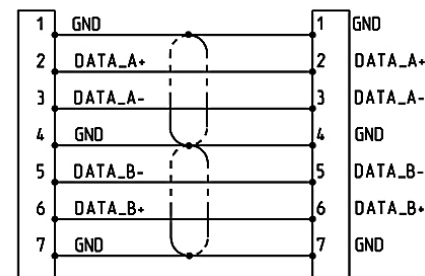
W14 - Console 212-1557-001 Cable, Speaker, Right



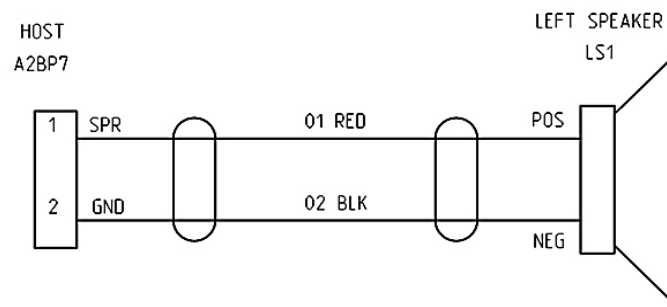
W14, 40 - Base 212-2220-xxx Cable, DC Power

MOTHERBOARD/
MOTHERBOARD
A2DP18 (SATA0)
A2DP19 (SATA1)

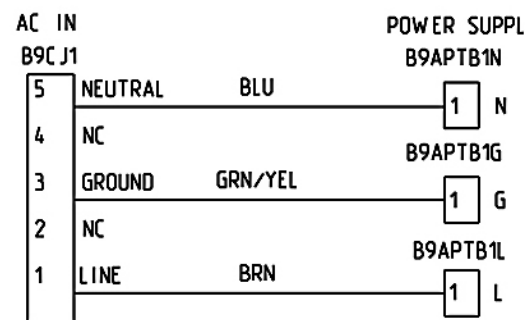
UPPER HDD/
LOWER HDD
A2GP2 (SIG)
A2HP2 (SIG)



W61, 62 - Console 212-2383-001 Cable, SATA SIG



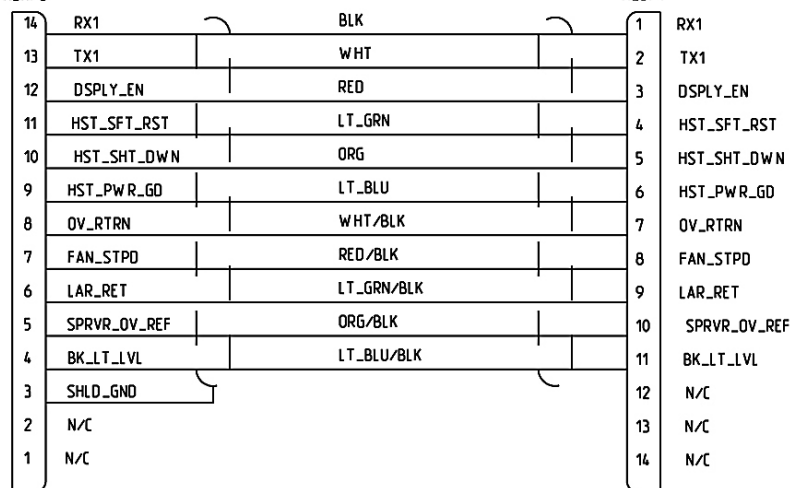
W15 - Console 212-1557-002 Cable, Speaker, Left



W15 - Base 212-2221-001 Cable, AC In

Cables, Interconnect, *Constellation** Vision System

POWER CONTROLLER PCBA
A3AP6



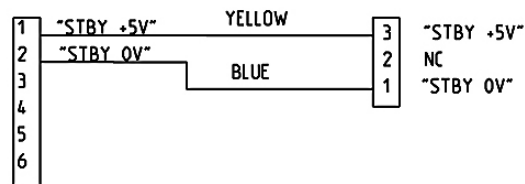
W16 - Console 212-1559-001 Cable, Host Interface

POWER DIST.
PCBA

B9BP4

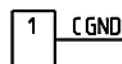
POWER SUPPLY

B9APCN1



W16 - Base 212-2222-001 Cable, PS Control

REF_DES_"A"

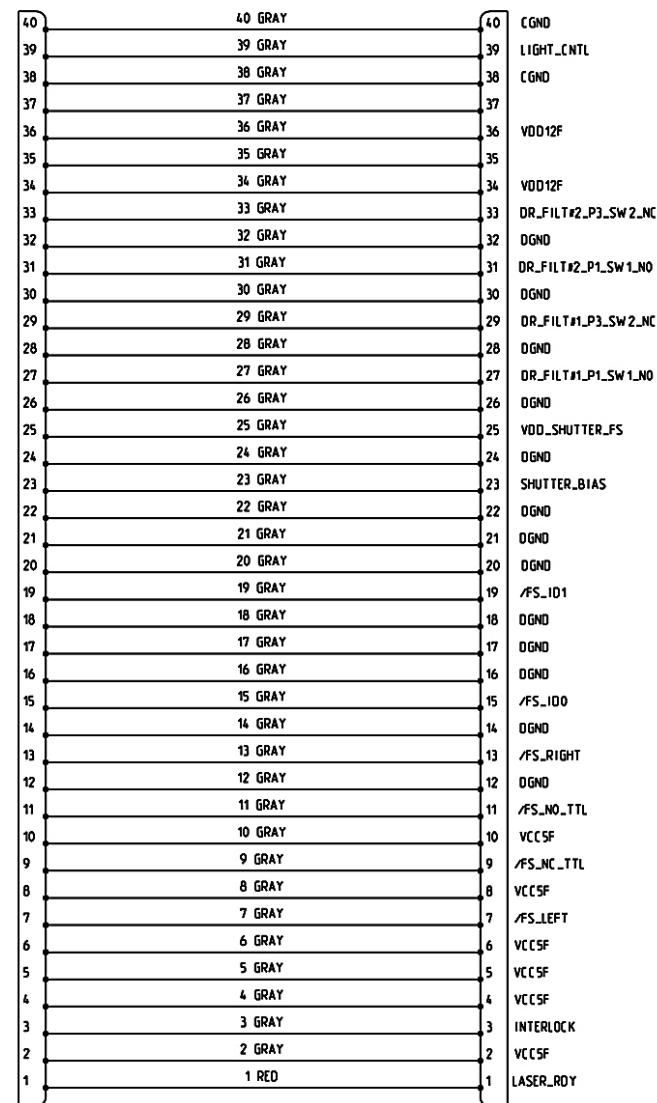


001 GRN/YEL

REF_DES_"B"



W120, 121 - Console 212-2223-XXX Cable, Ground
W17, 36 - Base



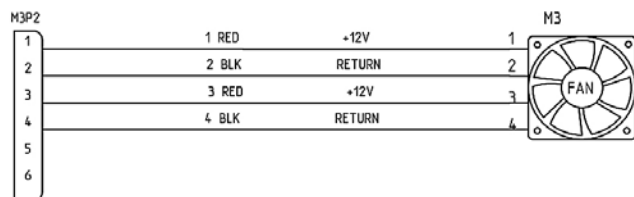
B5AP4
LASER INTERFACE PCBA
EXTENDER

B5CP7
LASER INTERFACE BREAKOUT PCBA

W19 - Base 212-1996-001 Cable, Laser Interface

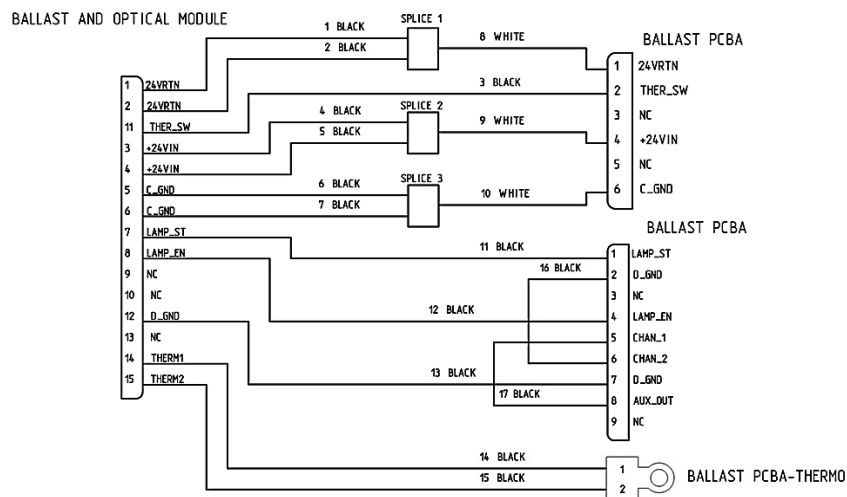
Cables, Interconnect, Constellation* Vision System

TO W 81



W29 - Console
W20 - Base

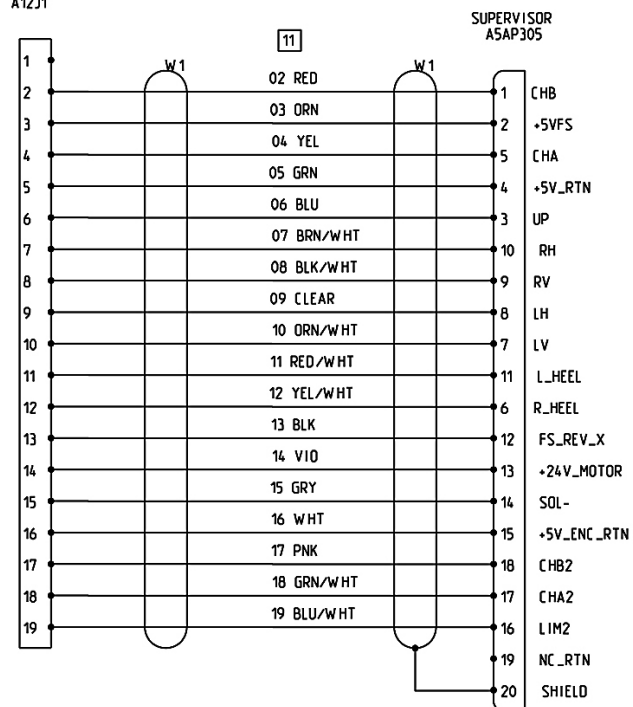
212-2268-002 Cable, Fan



W117 - Console
W21 - Base

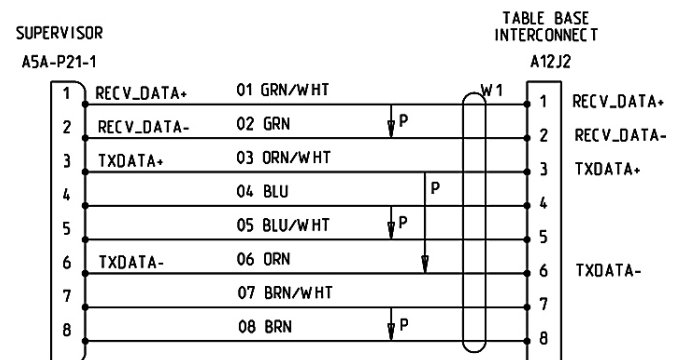
212-2655-001 Cable, Ballast Interface

TABLE BASE
INTERCONNECT
A12J1



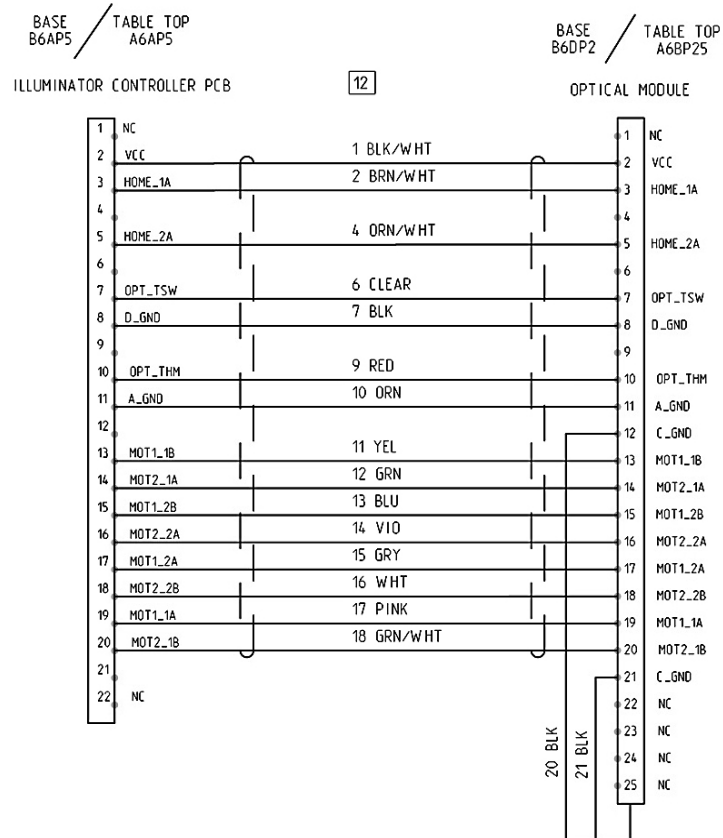
W22 - Console

212-1565-001 Cable, Footswitch



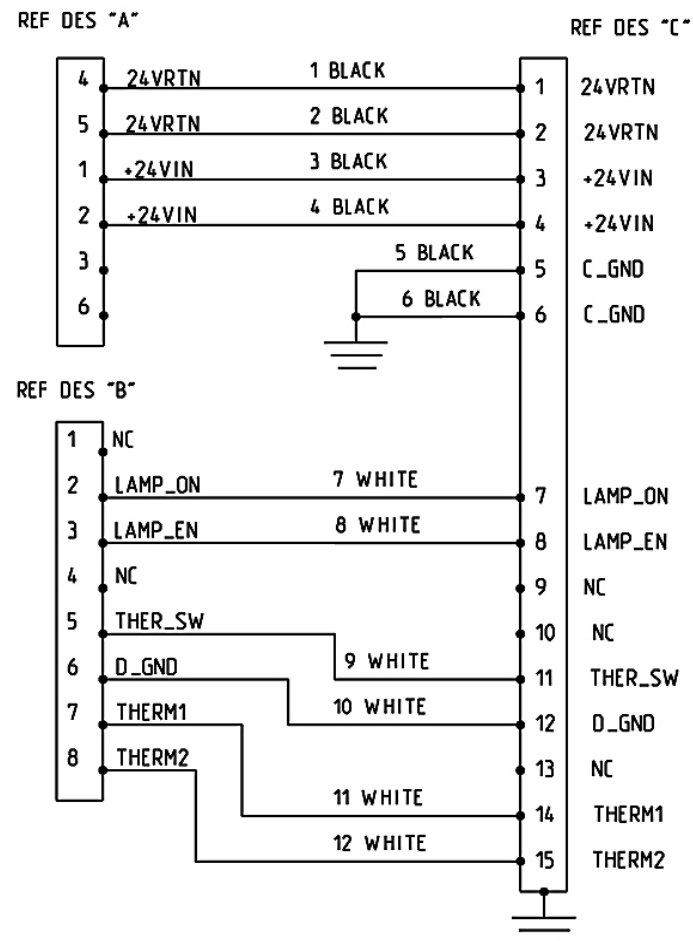
W23 - Console

212-1566-001 Cable, Ethernet to Base



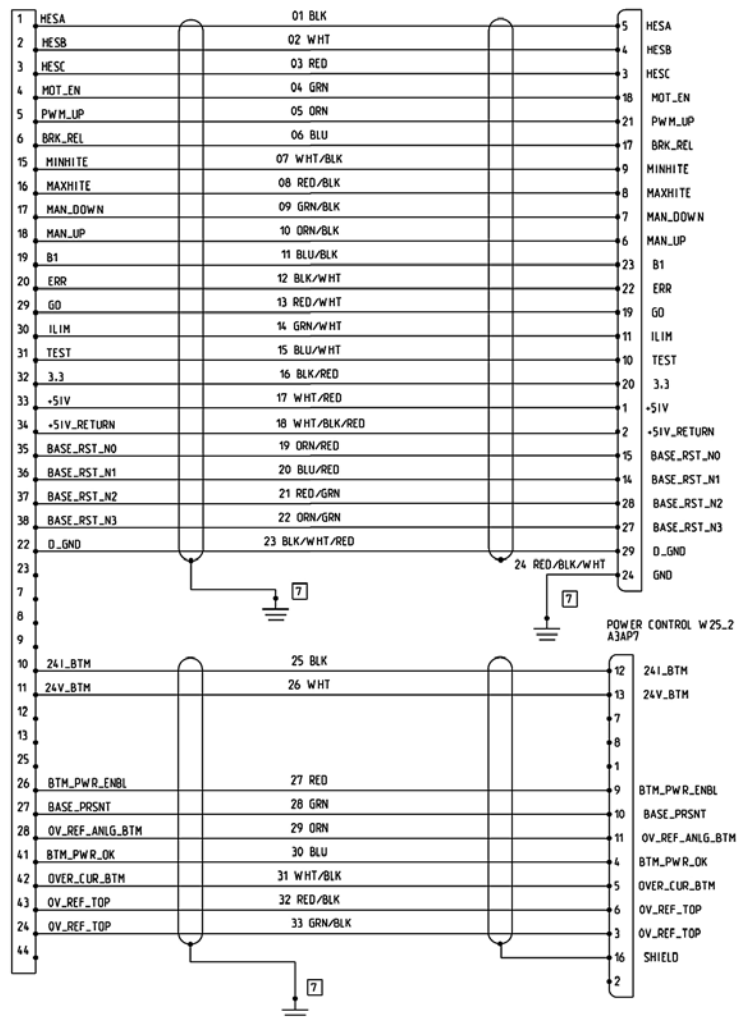
12 FIELD SERVICE: COLOR CODING MAY NOT FOLLOW AS SHOWN. ENSURE PIN TO PIN INTEGRITY.

W51 - Console 212-2196-001 Cable, Illum Opt Intfc
W24 - Base

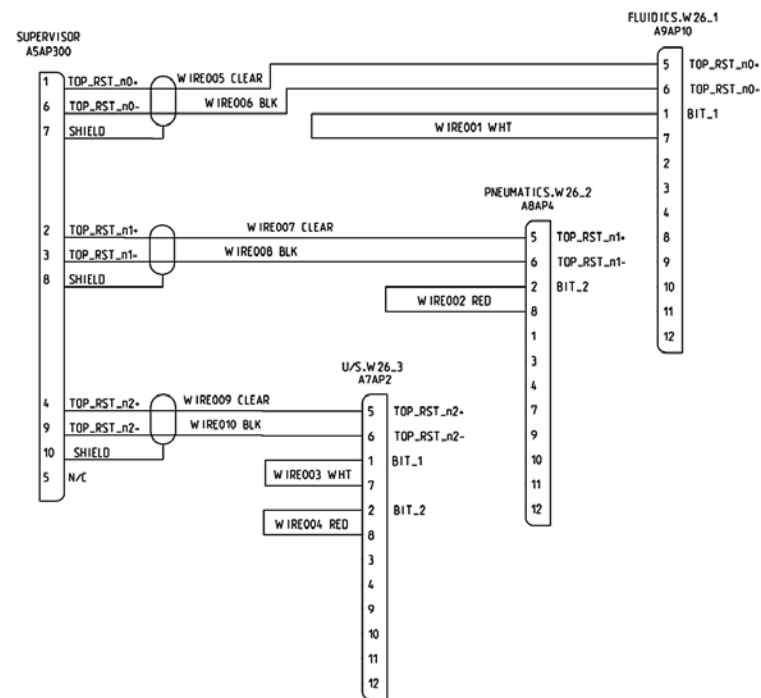


W50 - Console 212-2198-XXX Cable, Ballast Interface
W25 - Base

TABLE BASE
INTERCONNECT
A12J3



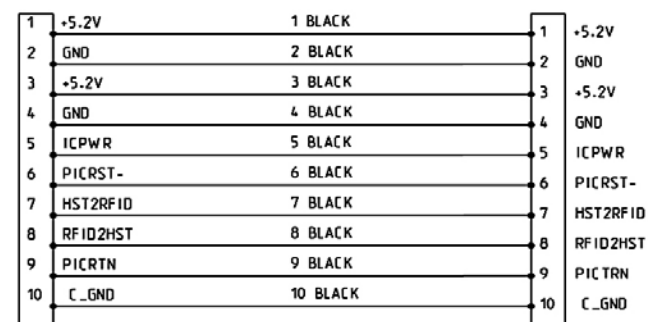
W25 - Console 212-1568-001 Cable, Data IO



W26 - Console 212-1569-001 Cable, Slot ID

(W52) ILLUM RFID PCBS / (W26) ILLUM RFID PCBA
A6CP1 B6CP1

(W52) ILLUM CONT PCBA / (W26) AUX ILLUM CONT PCBA
A6AP4 B6AP4

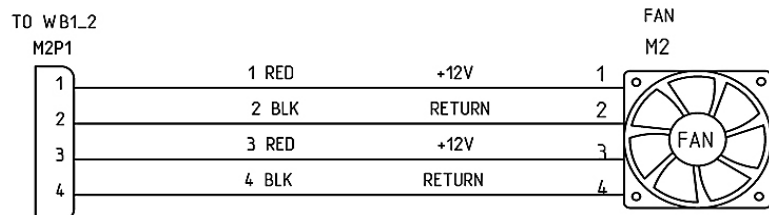


W52 - Console 212-2199-001 Cable, Illum RF ID INTFC
W26 - Base

Cables, Interconnect, *Constellation** Vision System

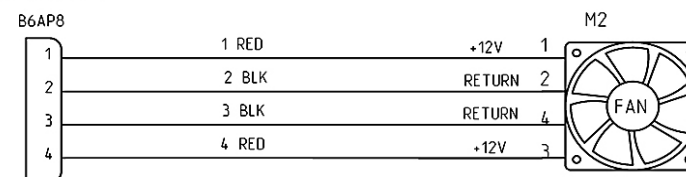
REFERENCE DESIGNATOR		
PIN TO PIN		
B6D3J5	B6D J7	
1	14	MOTOUT2_1A
2	2	+5V
3	15	MOTOUT1_2B
4	3	HOMES1A_IN
5	16	MOTOUT2_2A
6	4	HOMES1B_IN
7	17	MOTOUT1_2A
8	5	HOMES2A_IN
9	18	MOTOUT2_2B
10	6	HOMES2B_IN
11	19	MOTOUT1_1A
12	7	OPT_THERMALSW
13	20	MOTOUT2_1B
14	8	DGND
15	21	CGND [5]
16, 17	22	CGND
18	10	OPT_TEMP
19	11	AGND
20	12	CGND [5]
21	25	CGND
22	13	MOTOUT1_1B
NC	23	
NC	24	
NC	1	
NC	9	

W27 - Base 212-2657-001 Cable, Flex Aux Illum



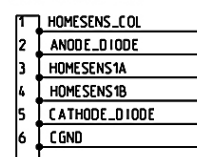
W28 - Console 212-2267-002 Cable, Fan

AUXILIARY ILLUMINATOR
CONTROL PCBA

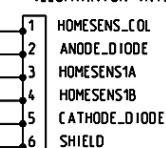


W33 - Base 212-2267-003 Cable, Fan Ballast

HOME SENSOR PCB



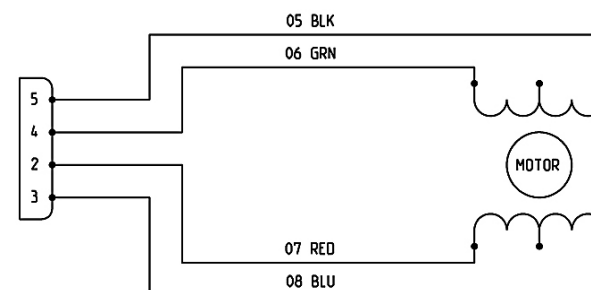
ILLUMINATOR INTERFACE PCB



W115, 116 - Console 212-2658-001 Cable, Home Pos Sensor
W28, 29 - Base

BASE OPTICS CABLE PCBA
W30, B6D3P4 W31, B6D3P3
TABLE TOP OPTICS CABLE PCBA
W113, A6HP3 W114, A6HP4

BASE OPTICAL MODULE
W30, M5 FAN W31, M6 FAN
TABLE TOP OPTICAL MODULE
W113, A6F MOTOR W114, A6G MOTOR

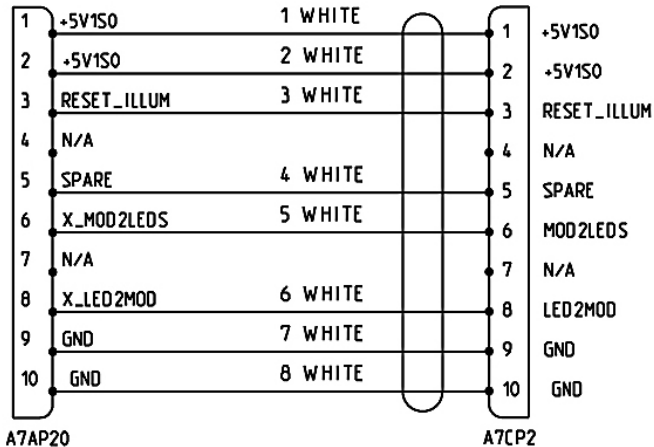


W113, 114 - Console 212-2656-001 Cable, Stepper Motor
W30, 31 - Base

Cables, Interconnect, Constellation[®] Vision System

U/S DIATHERMY PCBA

RING ILLUMINATION PCBA



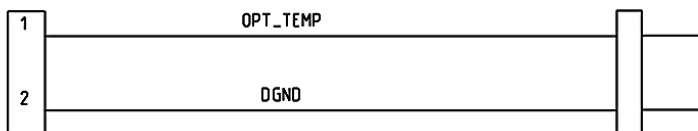
W31 - Console 212-2269-001 Cable, U/S Ring Illum

TABLE TOP OPTICS CABLE PCBA
A6HP6

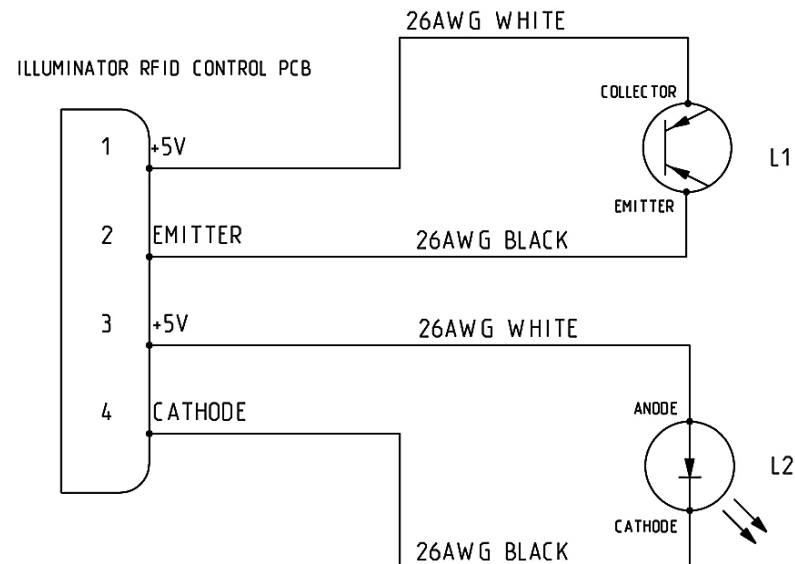
BASE OPTICS CABLE PCBA
B6D3P6

TABLE TOP OPTICAL MODULE
A6L_SENSOR

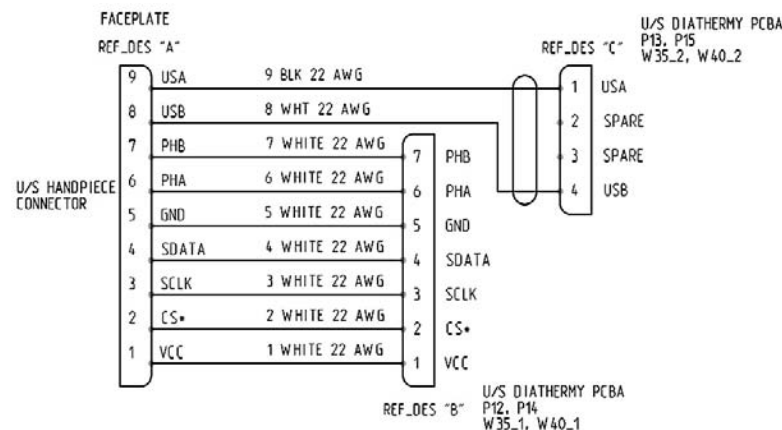
BASE OPTICAL MODULE
B6D5



W102 - Console 212-2623-001 Cable, Thermistor, Illum
W32 - Base

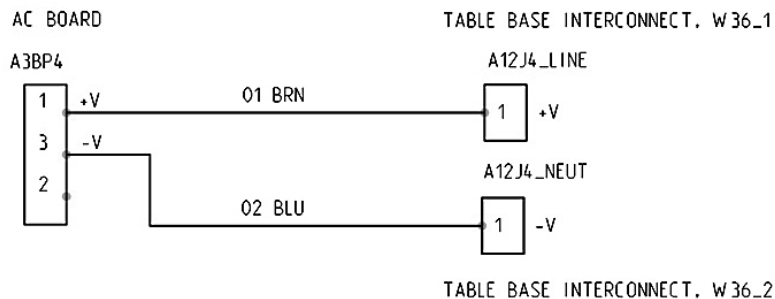


W118, 119 - Console 212-2266-001 Cable, Fiber Detect
W34, 35 - Base

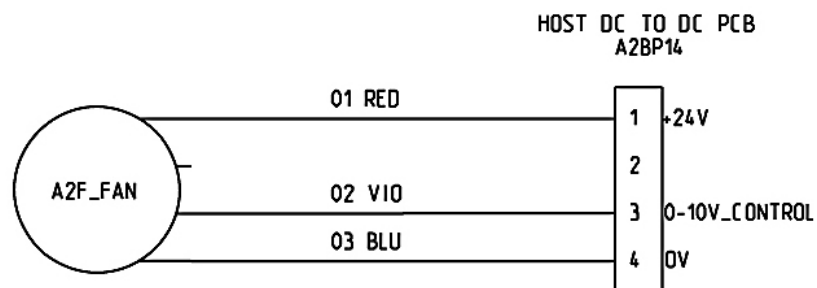


W35, 40 - Console 212-2271-001 Cable, U/S

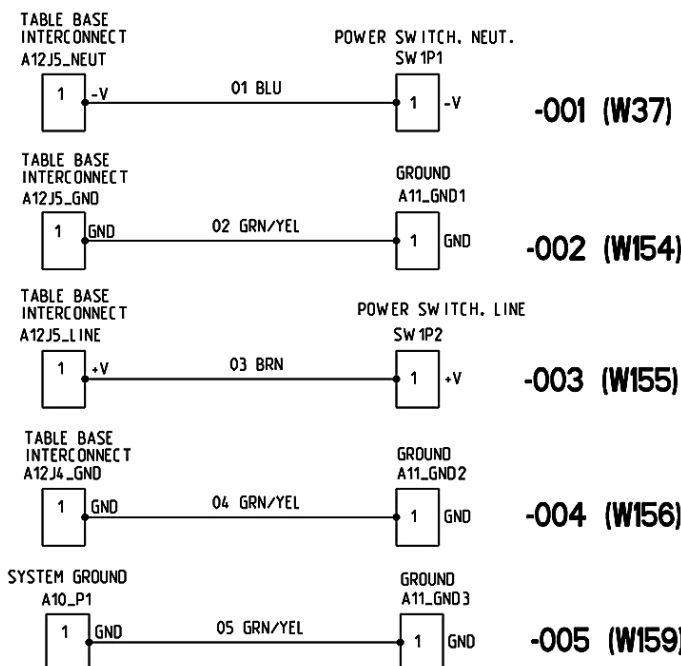
Cables, Interconnect, Constellation* Vision System



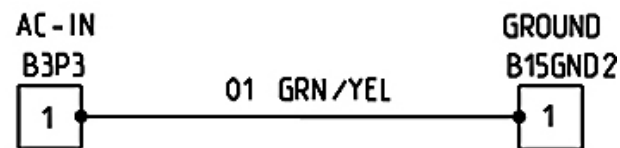
W36 - Console 212-1579-001 Cable, AC Output



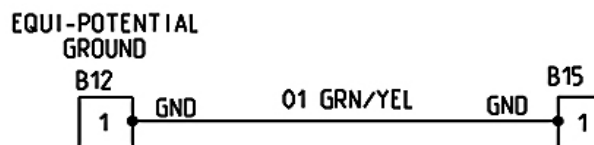
W39 - Console 212-2893-001 Cable, Host Fan



W37,154,155,156,159 - Console 212-1580-XXX Cable, AC Output

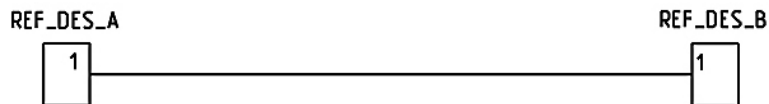


W37 - Base 212-2832-001 Cable, Ground

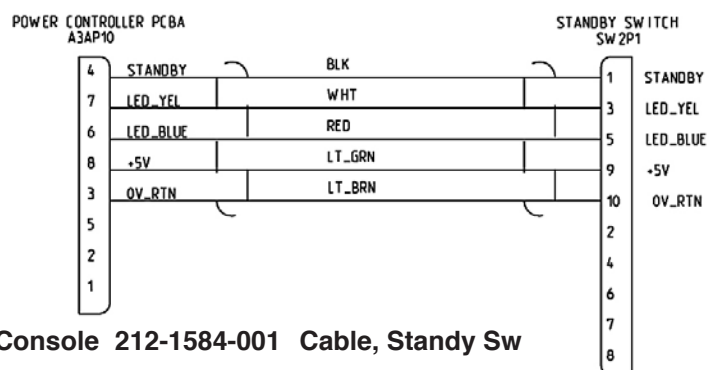


W38 - Base 212-2833-001 Cable, Ground

Cables, Interconnect, *Constellation** Vision System



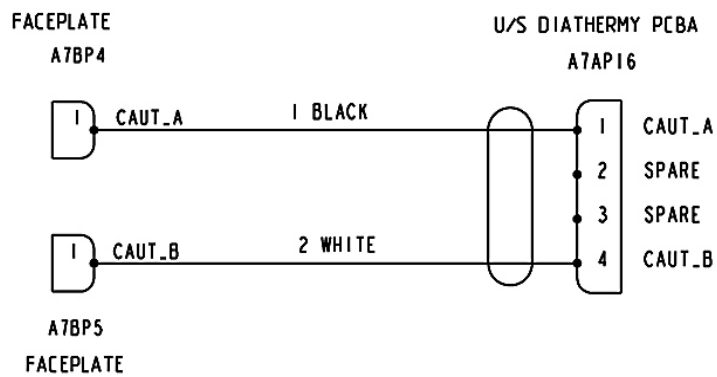
W150 - Console 212-2957-XXX Cable, Gnd, Illum Ejctr
W39 - Base



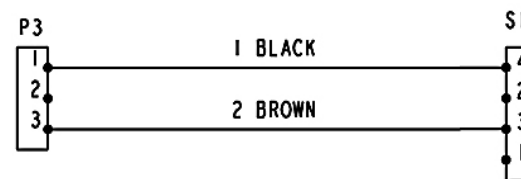
W41 - Console 212-1584-001 Cable, Standby Sw



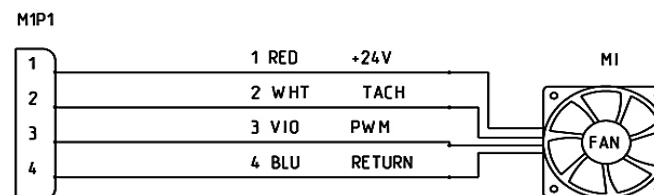
W41 - Base 212-2685-001 Cable, Assy LIO



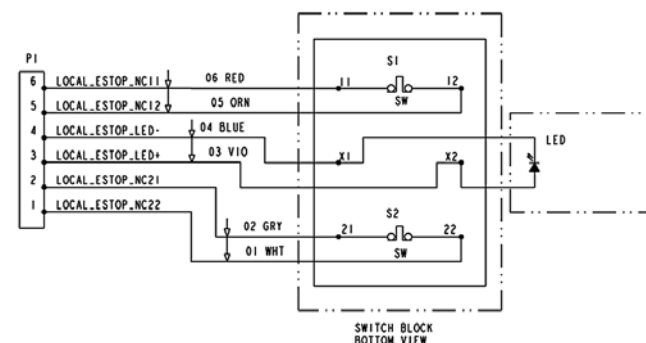
W42 - Console 212-2273-001 Cable, Diathermy



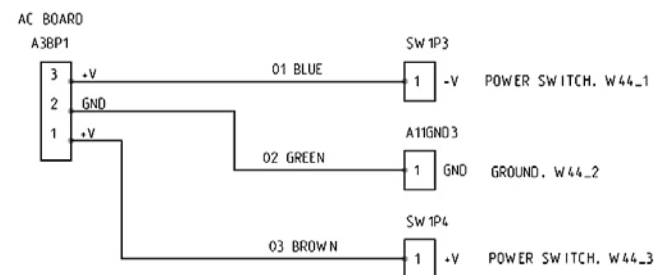
W42 - Base 212-2686-001 Cable, Assy, Keyswitch



W43 - Console 212-1586-001 Cable, Fan

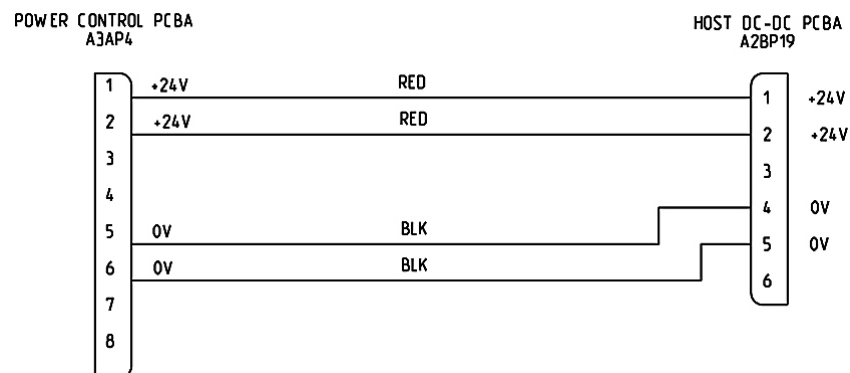


W43 - Base 212-2663-001 Cable, Assy, E-stop Laser

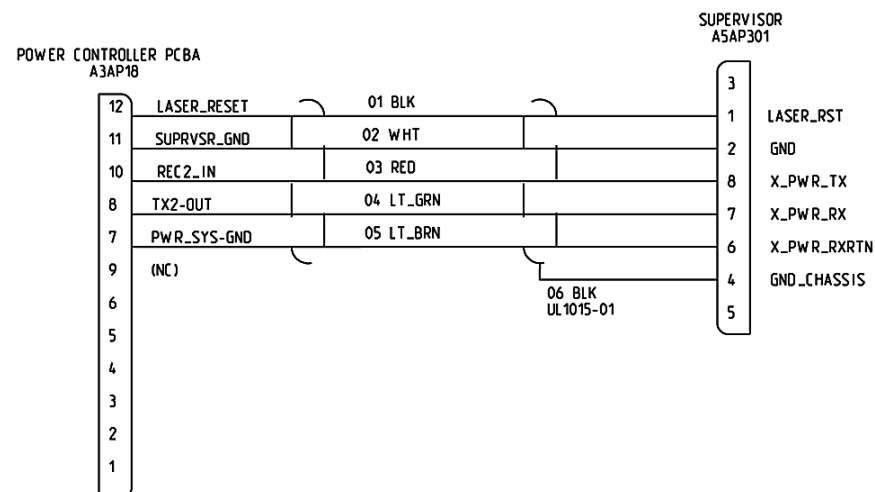


W44 - Console 212-1587-001 Cable, AC In Breaker

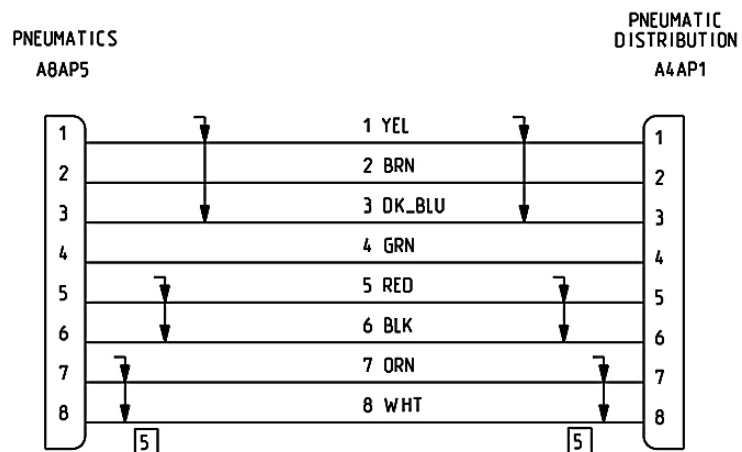
Cables, Interconnect, *Constellation** Vision System



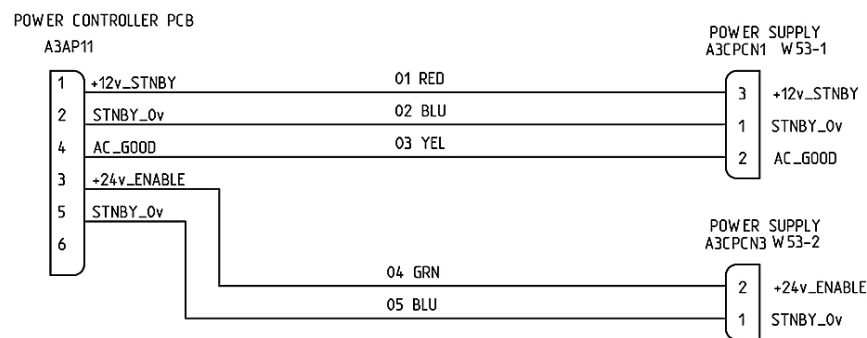
W46 - Console 212-1589-001 Cable, 24 VDC



W48 - Console 212-2063-001 Cable, Supervisor Inf

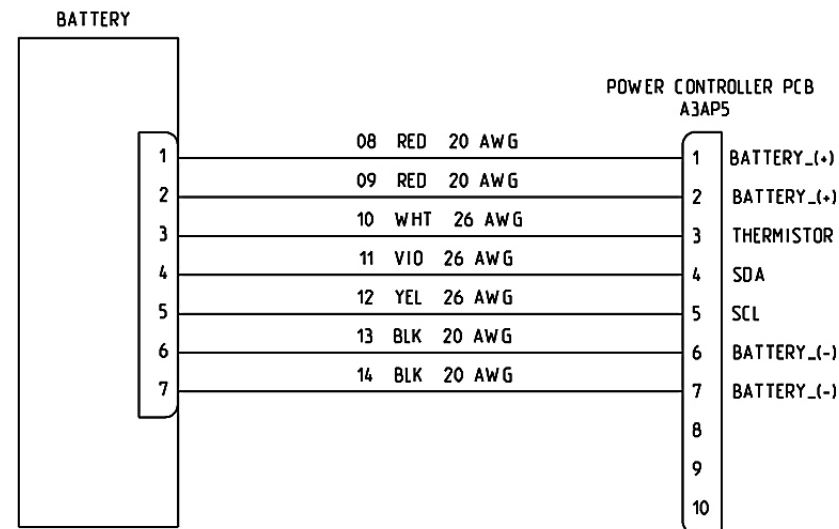


W47 - Console 212-2062-001 Cable, Pneu Dist



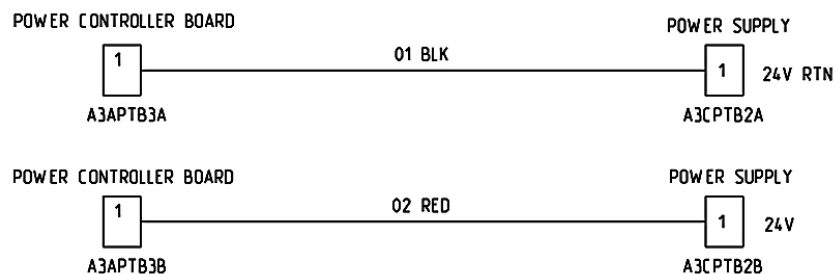
W53 - Console 212-2257-001 Cable, Pwr Sup Cntrl

REFERENCE DESIGNATOR		
PIN TO PIN		
A6HP5	A6BJ25	
1	14	MOTOUT2_1A
2	2	+5V
3	15	MOTOUT1_2B
4	3	HOMESEN1A_IN
5	16	MOTOUT2_2A
6	4	HOMESEN1B_IN
7	17	MOTOUT1_2A
8	5	HOMESEN2A_IN
9	18	MOTOUT2_2B
10	6	HOMESEN2B_IN
11	19	MOTOUT1_1A
12	7	OPT_THERMALSW
13	20	MOTOUT2_1B
14	8	DGND
15	21	CGND [5]
16, 17	22	CGND
18	10	OPT_TEMP
19	11	AGND
20	12	CGND [5]
21	25	CGND
22	13	MOTOUT1_1B
NC	23	
NC	24	
NC	1	
NC	9	

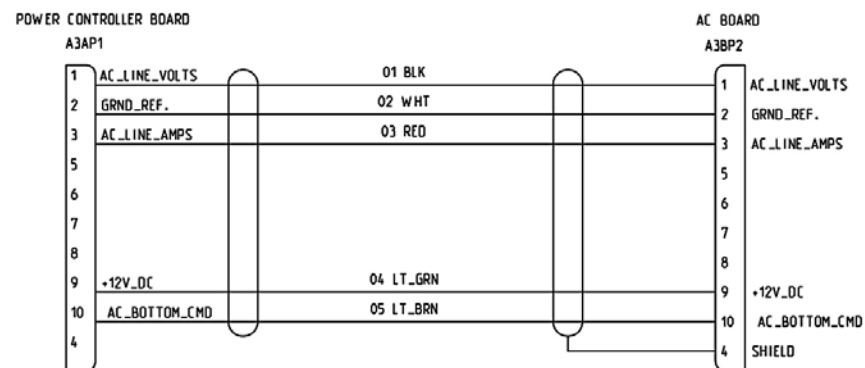


W55 - Console 212-2227-002 Battery, Power Module

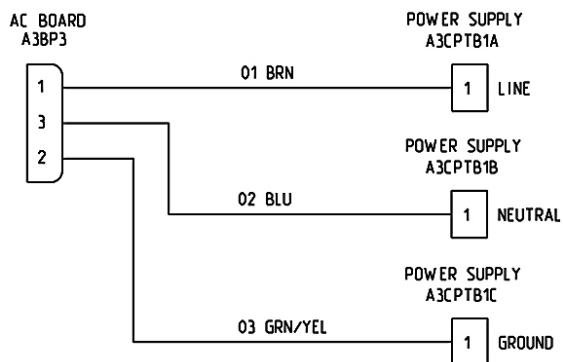
W49 - Console 212-2531-001 Cable, Circuit, Flex Illum



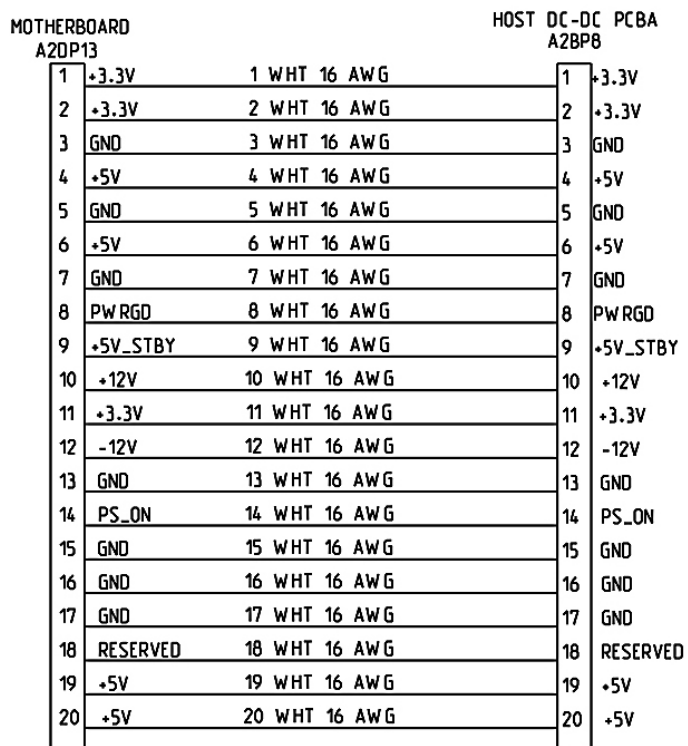
W54 - Console 212-2258-001 Cable, DC Power, Main



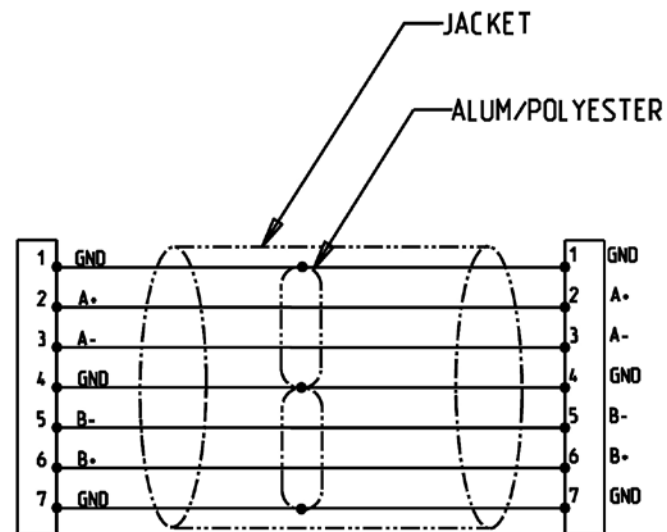
W56 - Console 212-2260-001 Cable, AC Control



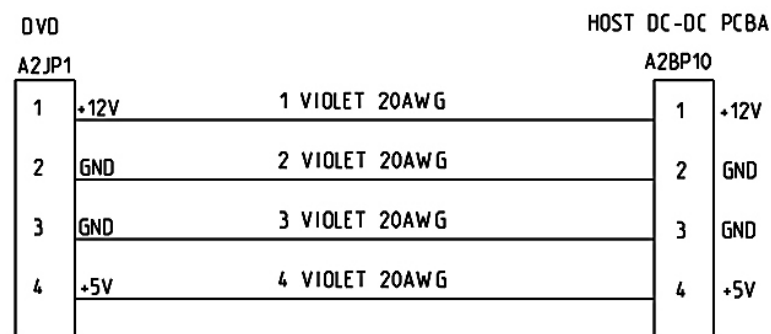
W57 - Console 212-2261-001 Cable, AC Power



W58 - Console 212-2381-001 Cable, ATX Power



W59, 60 - Console 022-183 Cable, SATA Power



W63 - Console 212-2384-001 Cable, DVD Power

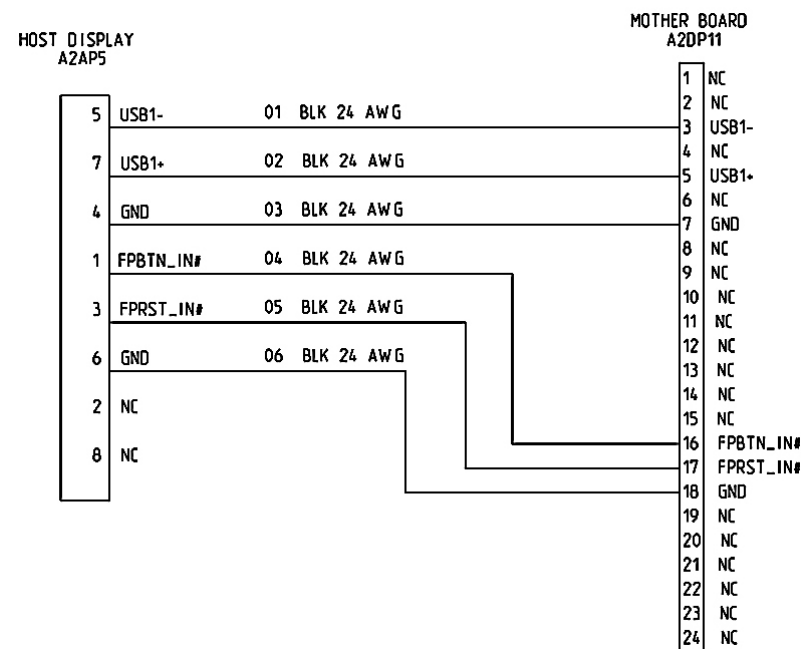
TABLE: CONNECTOR PIN OUT					
CONNECTOR PIN NO.	CONDUCTOR NO.	SIGNAL NAME	CONNECTOR PIN NO.	CONDUCTOR NO.	SIGNAL NAME
1	1	RESET	2	3	GROUND
3	5	DATA 7	4	7	DATA 8
5	9	DATA 6	6	11	DATA 9
7	13	DATA 5	8	15	DATA 10
9	17	DATA 4	10	19	DATA 11
11	21	DATA 3	12	23	DATA 12
13	25	DATA 2	14	27	DATA 13
15	29	DATA 1	16	31	DATA 14
17	33	DATA 0	18	35	DATA 15
19	37	GROUND	20	39	KEY
21	41	DMARQ	22	43	GROUND
23	45	D10W-	24	47	GROUND
25	49	D10R-	26	51	GROUND
27	53	IORDY	28	55	CSEL
29	57	DMARK-	30	59	GROUND
31	61	INTRQ	32	63	IDCS16-
33	65	DA1	34	67	PD1AG-(GND)
35	69	DA0	36	71	DA2
37	73	CS1FX-	38	75	CS3FX-
39	77	DASP-	40	79	GROUND

ALL EVEN CABLE CONDUCTOR NUMBERS ARE GROUND [7]

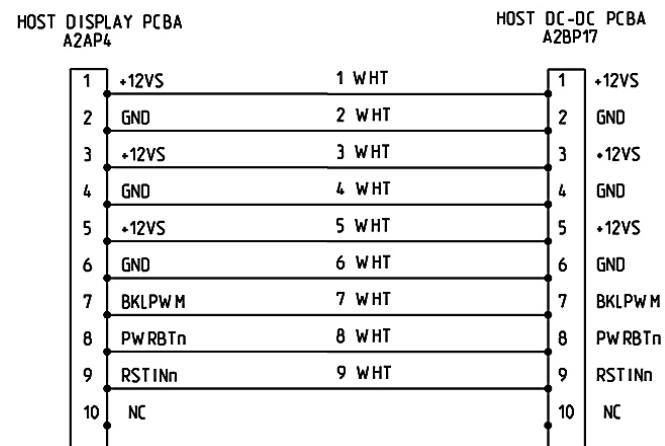
[7] EVEN NUMBER OF CABLE CONDUCTORS (ITEM 5) ARE CONNECTED TO THE CONNECTOR CENTER GROUND BAR. ALL GROUND SIGNALS ARE CONNECTED TOGETHER.

[8] PIN 34 NOT CONNECTED AT BLU CONNECTOR END.

W64 - Console 212-2385-001 Cable, IDE Signal

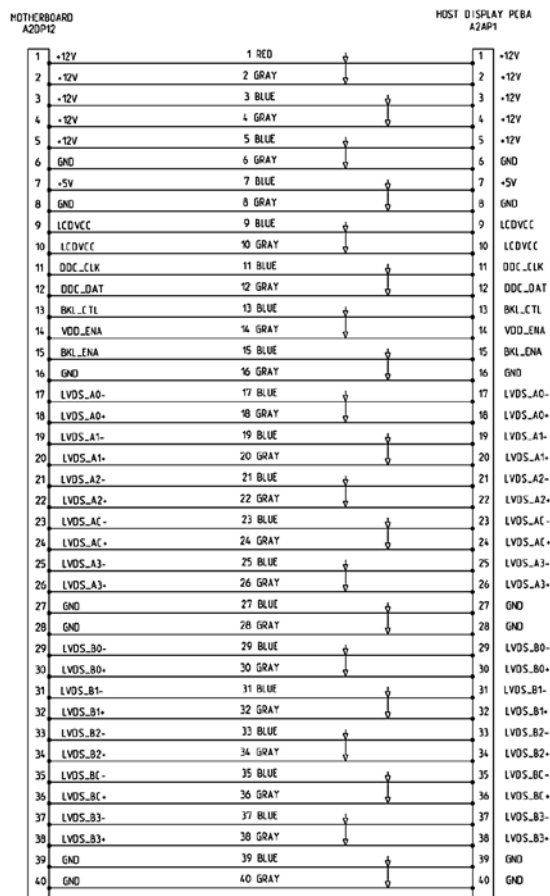


W66 - Console 212-2387-001 Cable, Front Panel USB

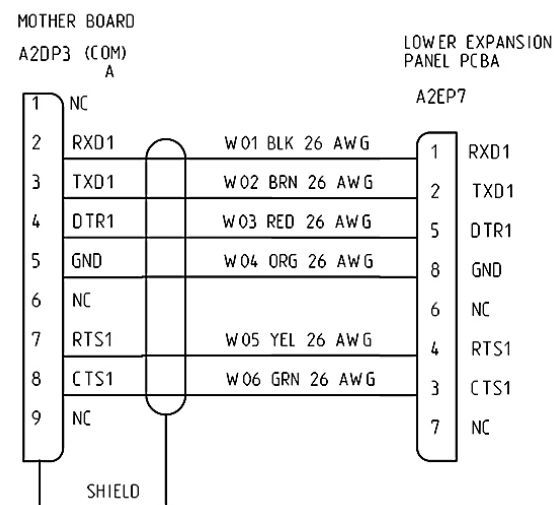


W68, 79 - Console 212-2389-001 Cable, Power Front Panel

Cables, Interconnect, Constellation* Vision System



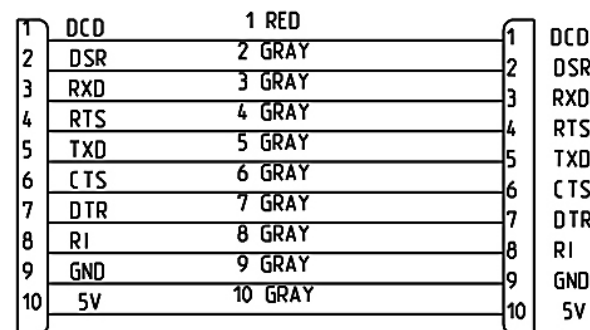
W67 - Console 212-2388-001 Cable, LVDS Signal



W69 - Console 212-2390-001 Cable, Serial, IO Ext

REF DES "A"

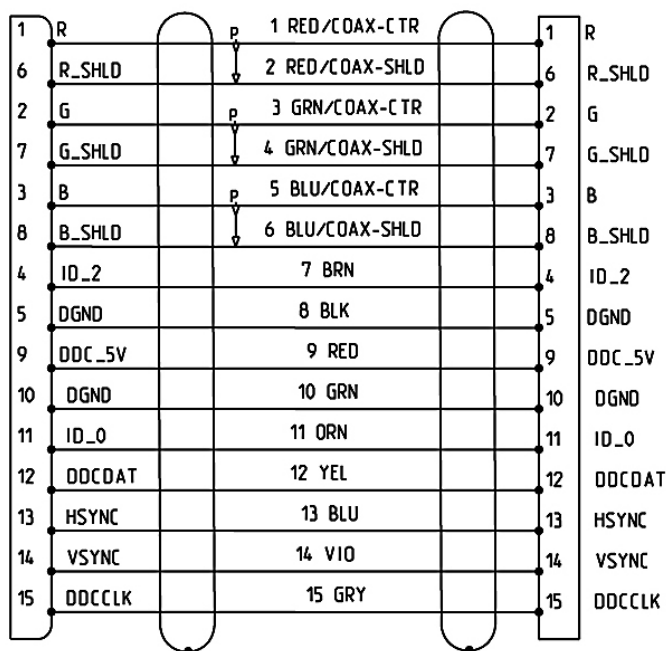
REF DES "B"



W70, 71 - Console 212-2391-XXX Cable, Serial, Ext

**MOTHERBOARD
A2DP6 (CRT)**

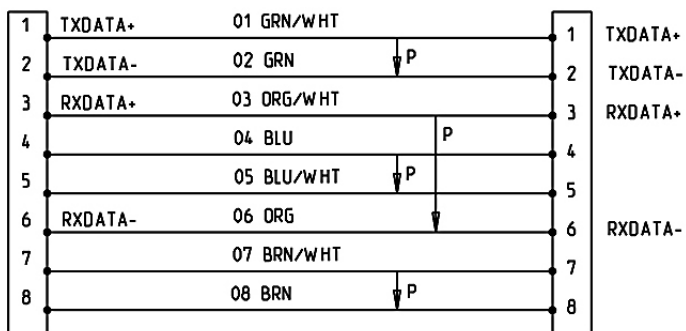
**UPPER EXPANSION PCBA
A2CP6**



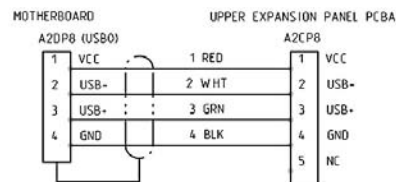
W72 - Console 212-3084-001 Cable, VGA, Ext

**MOTHERBOARD
A2DP7**

**UPPER EXPANSION PANEL PCBA
A2CP7**

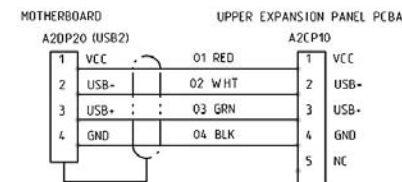


W73 - Console 212-2393-001 Cable, Ethernet Extn



SCHEMATIC, W74

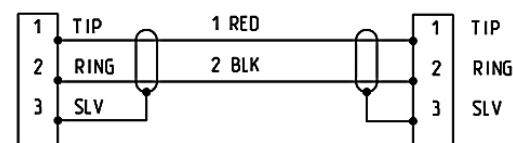
W74 - Console 212-2394-001 Cable, USB, Port Ext
W165 - CR3 ONLY



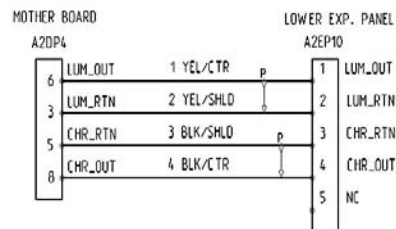
SCHEMATIC, W165

**LOWER EXP PANEL/HOST DC_DC_PCBA
A2EP12 /A2BP5**

**HOST MOTHER BOARD
A2DP2 /A2DP10**

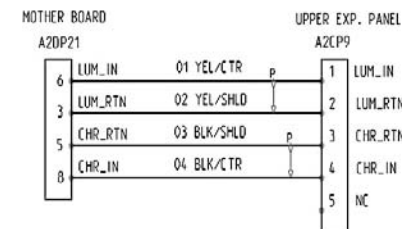


W75, 76 - Console 212-2395-001 Cable, Audio Ext

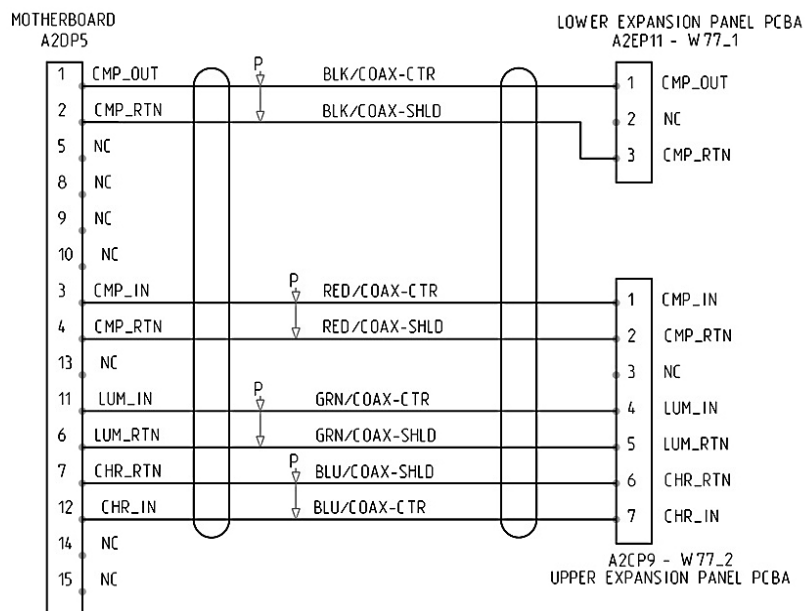


SCHEMATIC, W78

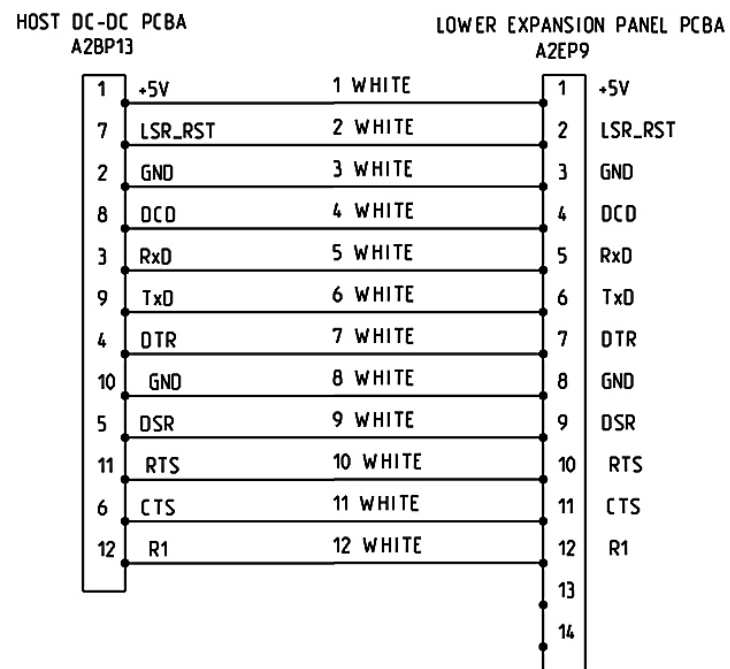
W78 - Console 212-2397-001 Cable, S-Video, Out Ext



SCHEMATIC, W78

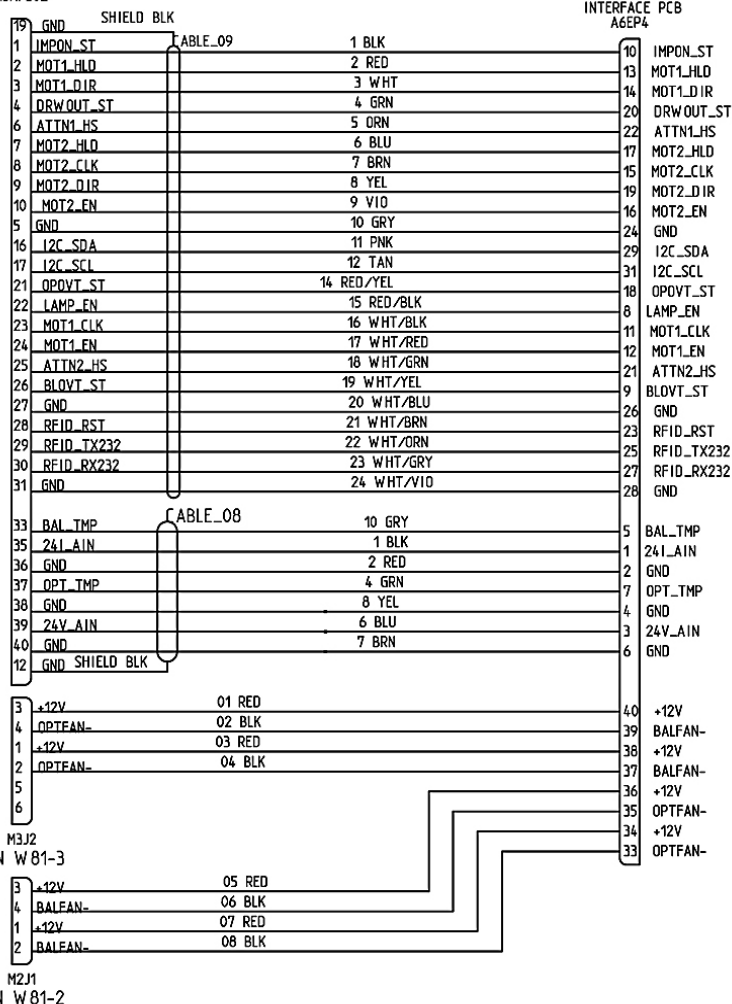


W77 - Console 212-2396-001 Cable, VOM Signal, Ext



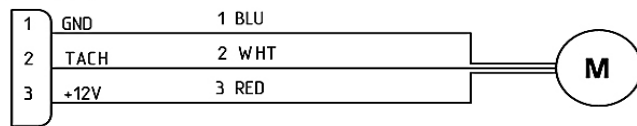
W80 - Console 212-2399-001 Cable, Expansion Pwr Sgnl

SUPERVISOR W81-1
A5AP302



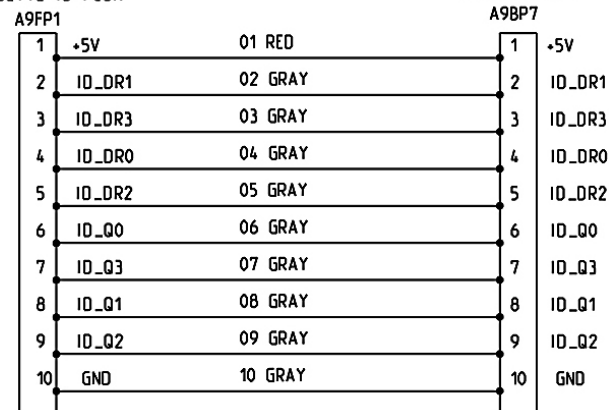
W81 - Console 212-2499-001 Cable, I/O Control

A9AP7/A9AP4

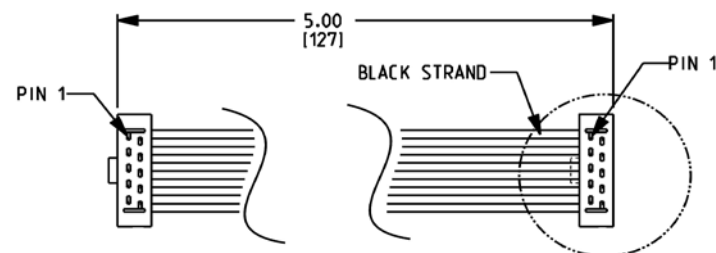


W84, 160 - Console 212-2937-001 Cable, Fluidics Fan

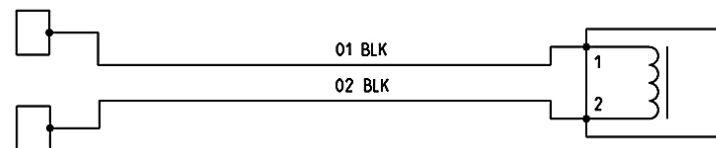
CASSETTE ID PCBA



W85 - Console 212-2293-001 Cable, Cassette ID



W87 - 023-095 Cable, Flat, 2mm, IDC Socket



W89, 91 - Console 212-2633-001 Cable, Prop Valve

Cables, Interconnect, *Constellation** Vision System

FLUIDICS CONTROLLER A9AP6

1	CID_EN0	01 RED
2	CID_EN3	02 GRAY
3	CID_EN1	03 GRAY
4	CID_EN2	04 GRAY
5	CID_A0	05 GRAY
6	CID_A2	06 GRAY
7	CID_A1	07 GRAY
8	CID_A3	08 GRAY
9	PS30	09 GRAY
10	PS100	10 GRAY
11	REF	11 GRAY
12	AGND	12 GRAY
13	+12VA	13 GRAY
14	+12VA	14 GRAY
15	AGND	15 GRAY
16	CASS_IN	16 GRAY
17	CASS_REL	17 GRAY
18	LATCH	18 GRAY
19	+24VSW	19 GRAY
20	PPV_VBST	20 GRAY
21	+24VSW	21 GRAY
22	PPV_VAC	22 GRAY
23	+24VSW	23 GRAY
24	PPV_PRES	24 GRAY
25	+5VA	25 GRAY
26	+5VA	26 GRAY
27	AGND	27 GRAY
28	AGND	28 GRAY
29	DGND	29 GRAY
30	+24VSW	30 GRAY
31	SMC_SUC	31 GRAY
32	+24VSW	32 GRAY
33	SMC_RFX	33 GRAY
34	DGND	34 GRAY

SUCTION PCBA A9BP1

1	CID_EN0
2	CID_EN3
3	CID_EN1
4	CID_EN2
5	CID_A0
6	CID_A2
7	CID_A1
8	CID_A3
9	PS30
10	PS100
11	REF
12	AGND
13	+12VA
14	+12VA
15	AGND
16	CASS_IN
17	CASS_REL
18	LATCH
19	+24VSW
20	PPV_VBST
21	+24VSW
22	PPV_VAC
23	+24VSW
24	PPV_PRES
25	+5VA
26	+5VA
27	AGND
28	AGND
29	DGND
30	+24VSW
31	SMC_SUC
32	+24VSW
33	SMC_RFX
34	DGND

INFUSION PCBA A9CP1

1	+24VSW	01 RED
2	ISO_FAX	02 GRAY
3	+24VSW	03 GRAY
4	ISO_A	04 GRAY
5	+24VSW	05 GRAY
6	ISO_SRC	06 GRAY
7	+24VSW	07 GRAY
8	ISO_B	08 GRAY
9	+24VSW	09 GRAY
10	ISO_BKUP	10 GRAY
11	AGND	11 GRAY
12	AGND	12 GRAY
13	AGND	13 GRAY
14	AGND	14 GRAY
15	AGND	15 GRAY
16	+24VSW	16 GRAY
17	PPV_VB	17 GRAY
18	+24VSW	18 GRAY
19	PPV_PB	19 GRAY
20	+24VSW	20 GRAY
21	PPV_PS	21 GRAY
22	+24VSW	22 GRAY
23	PPV_VS	23 GRAY
24	+24VSW	24 GRAY
25	PPV_PA	25 GRAY
26	+24VSW	26 GRAY
27	PPV_VA	27 GRAY
28	AGND	28 GRAY
29	AGND	29 GRAY
30	+12VA	30 GRAY
31	+12VA	31 GRAY
32	AGND	32 GRAY
33	AGND	33 GRAY
34	PS_REF	34 GRAY
35	PS_B2	35 GRAY
36	PS_B1	36 GRAY
37	PS_S2	37 GRAY
38	PS_S1	38 GRAY
39	PS_A2	39 GRAY
40	PS_A1	40 GRAY

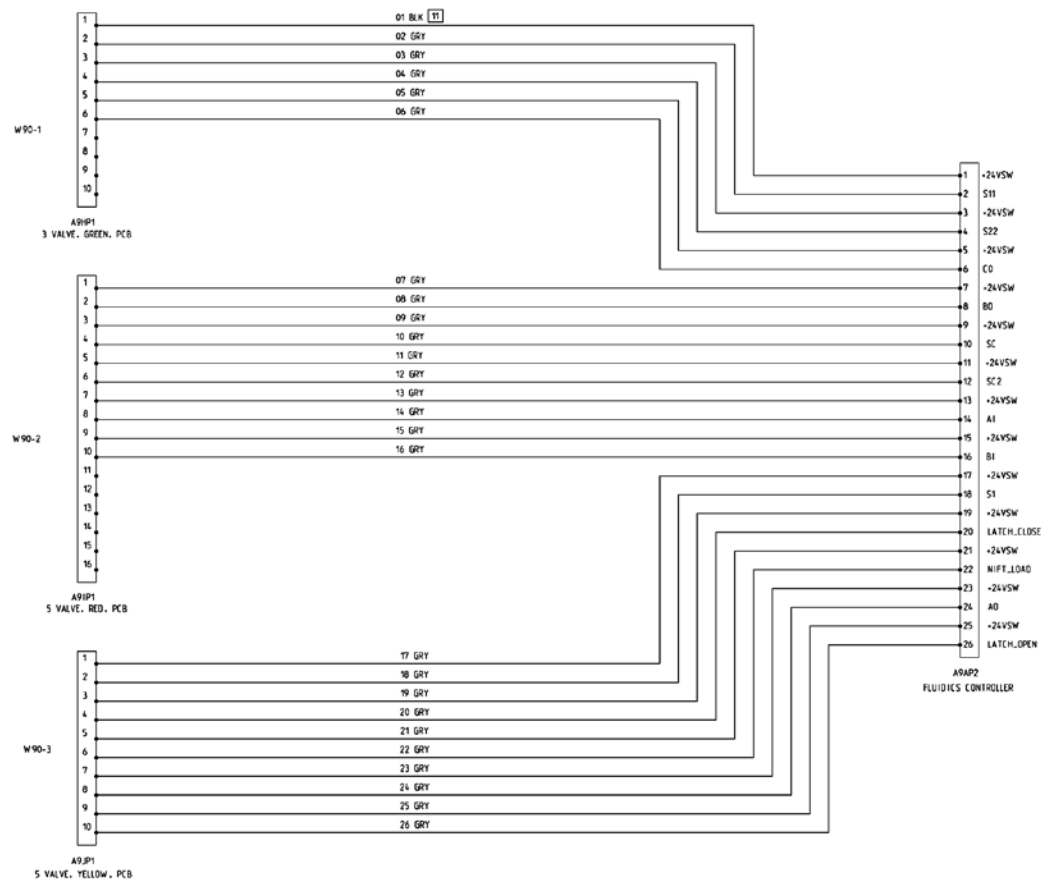
FLUIDICS CONTROLLER A9AP1

1	+24VSW
2	ISO_FAX
3	+24VSW
4	ISO_A
5	+24VSW
6	ISO_SRC
7	+24VSW
8	ISO_B
9	+24VSW
10	ISO_BKUP
11	AGND
12	AGND
13	AGND
14	AGND
15	AGND
16	+24VSW
17	PPV_VB
18	+24VSW
19	PPV_PB
20	+24VSW
21	PPV_PS
22	+24VSW
23	PPV_VS
24	+24VSW
25	PPV_PA
26	+24VSW
27	PPV_VA
28	AGND
29	AGND
30	+12VA
31	+12VA
32	AGND
33	AGND
34	PS_REF
35	PS_B2
36	PS_B1
37	PS_S2
38	PS_S1
39	PS_A2
40	PS_A1

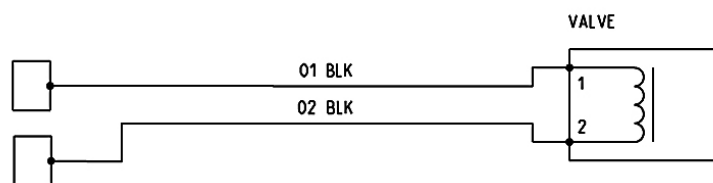
W88 - Console 212-2252-001 Cable, Inf Controller

W86 - Console 212-2291-001 Cable, Suction Control

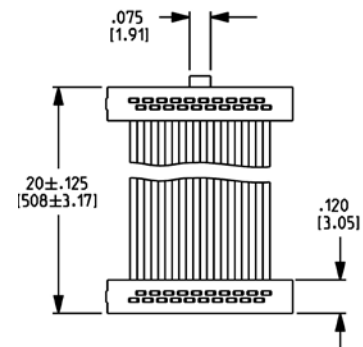
Cables, Interconnect, *Constellation** Vision System



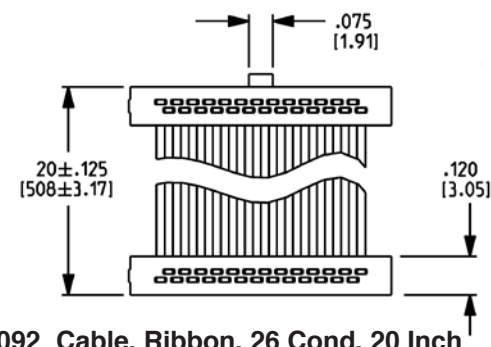
W90 - Console 212-2288-001 Cable, X Valve



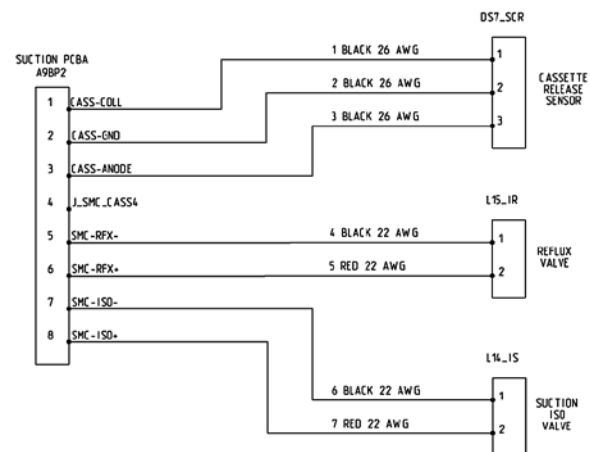
W92 - Console 212-2632-001 Cable, Prop Valve



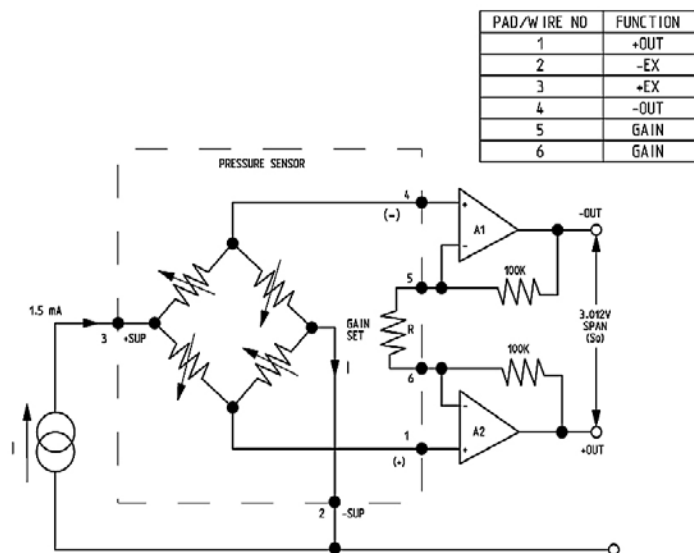
W93 - 023-091 Cable, Ribbon, 20 Cond, 20 Inch



W94 - 023-092 Cable, Ribbon, 26 Cond, 20 Inch



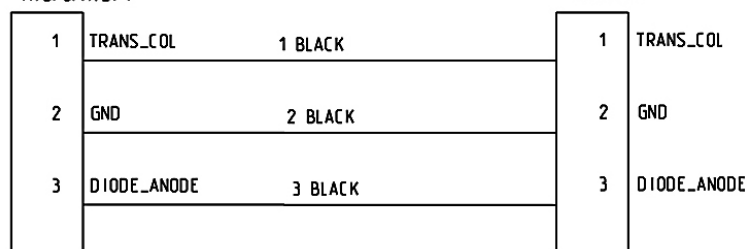
W95 - Console 212-2294-001 Cable, SMC Cass-Rel



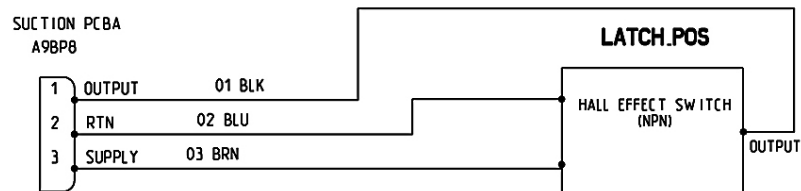
W96 - Console 212-2580-001 Sensor, Pressure, ABS 30
W97 - Console 212-2579-001 Sensor, Pressure, ABS 100

SUCTION PCB/INFUSION LIGHT PCB
A9BP6/A9DP4

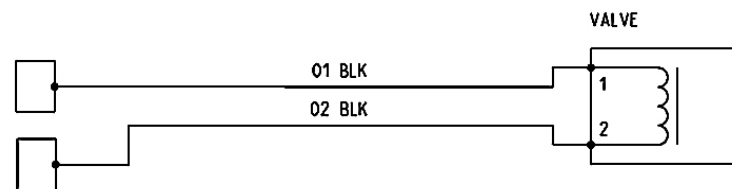
UPPER/LOWER CASSETTE SENSOR
DS5/DS6



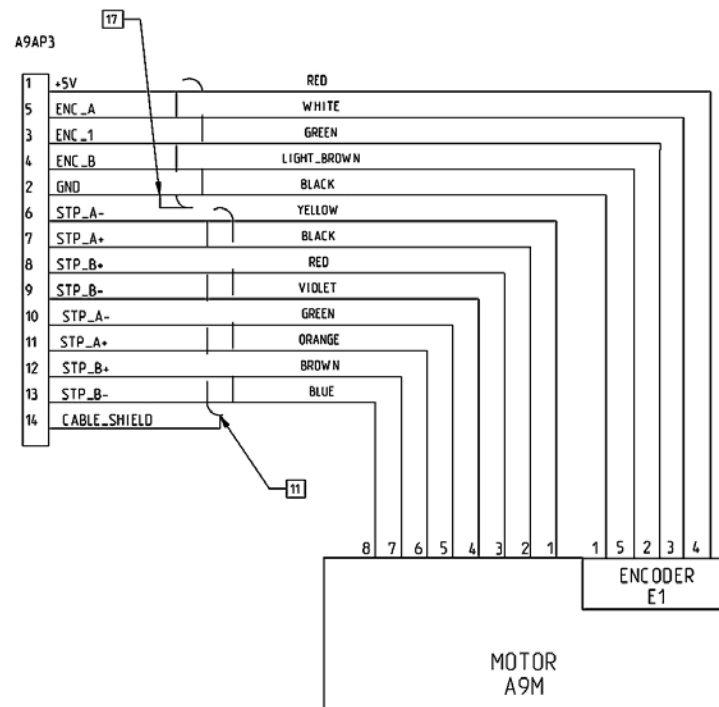
W98, 106 - Console 212-2292-xxx Cable, Cass In Sensor



W99 - Console 212-2272-001 Cable, Latch Pos



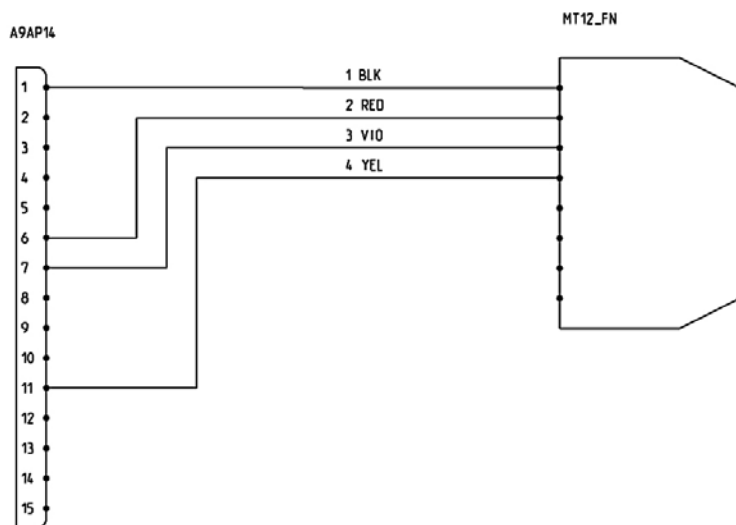
W100, 107, 108 - Console 212-2634-001 Cable, Prop Valve, LW



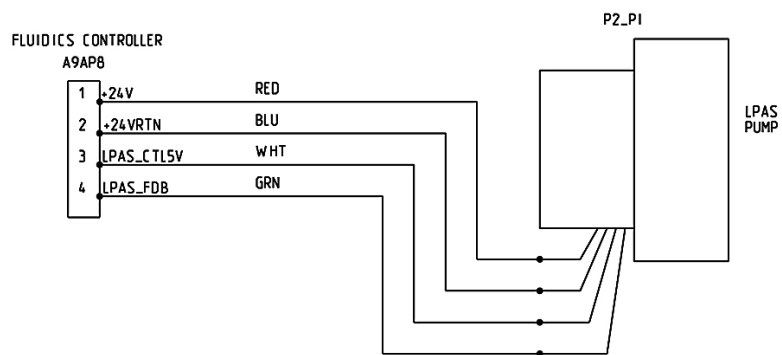
11 SOLDER GRAY WIRE (ITEM 11) TO SHIELD OF MOTOR CABLE AND CRIMP TO PIN 14 OF CONNECTOR (ITEM 5). COVER SOLDER CONNECTION WITH HEATSHRINK TUBING.

W101 - Console 212-2575-001 Motor, Stepper W/Encoder

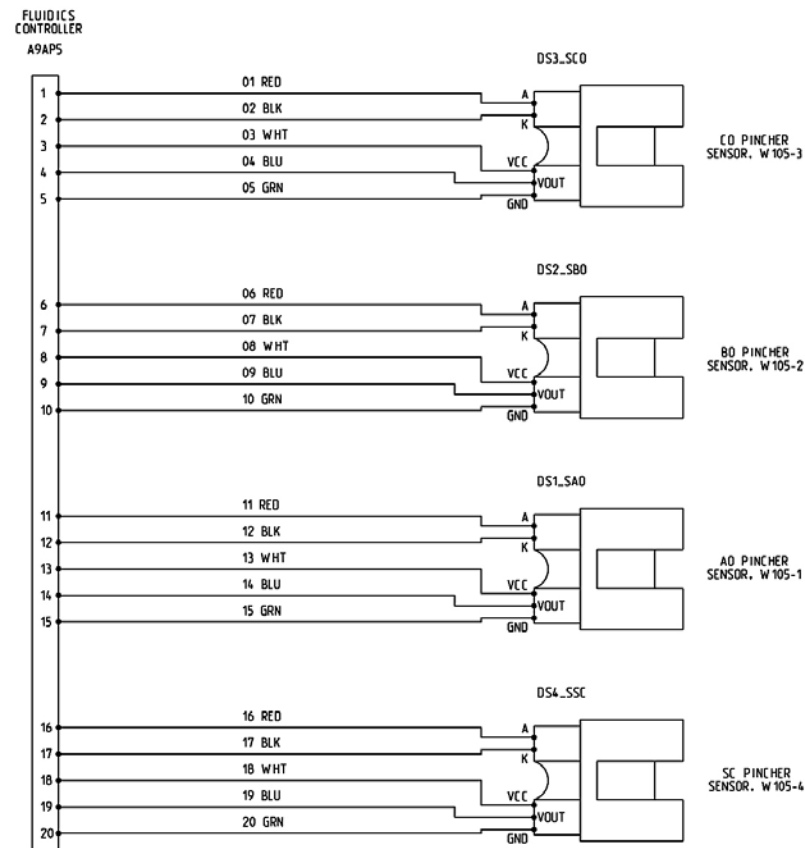
Cables, Interconnect, Constellation[®] Vision System



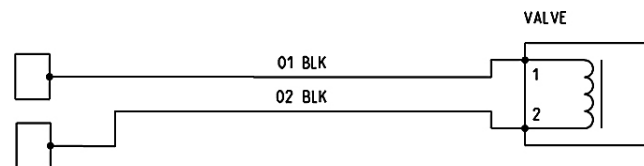
W103 - Console **212-2308-001** **Cable, Sensor, Flow**



W104 - Console **212-2290-001** **Cable, LPAS Pump**



W105 - Console **212-2284-001** **Cable, Sens, Pincher**



W109 - W111 **212-2632-001** **Cable, Assy, Prop Valve, 3S**

PNEUMATICS PCBA
ABAP7

1	AGF1	01 RED	1
2	AGF2	02 GRY	2
3	VITB	03 GRY	3
4	VFC1	04 GRY	4
5	VITA	05 GRY	5
6	VFC2	06 GRY	6
7	BIAS_REF	07 GRY	7
8	CURRENT_REF	08 GRY	8
9	GND	09 GRY	9
10	GND	10 GRY	10
11	GND	011 GRY	11
12	GND	012 GRY	12
13	GND	013 GRY	13
14	FORCEP+	014 GRY	14
15	FORCEP-	015 GRY	15
16	AGF1+	016 GRY	16
17	AGF1-	017 GRY	17
18	AGF2+	018 GRY	18
19	AGF2-	019 GRY	19
20	AGFAIR+	020 GRY	20
21	AGFAIR-	021 GRY	21
22	VFCP+	022 GRY	22
23	VFCP-	023 GRY	23
24	VFCV+	024 GRY	24
25	VFCV-	025 GRY	25
26	UTIL_PRESS+	026 GRY	26
27	UTIL_PRESS-	027 GRY	27
28	UTIL_VENT+	028 GRY	28
29	UTIL_VENT-	029 GRY	29
30	SHEAR+	030 GRY	30
31	SHEAR-	031 GRY	31
32	SCISSOR+	032 GRY	32
33	SCISSOR-	033 GRY	33
34	VIT_ISO+	034 GRY	34
35	VIT_ISO-	035 GRY	35
36	VIT&WAY+	036 GRY	36
37	VIT&WAY-	037 GRY	37
38	SPARE+	038 GRY	38
39	SPARE-	039 GRY	39
40	CUT_VENT+	040 GRY	40
41	CUT_VENT-	041 GRY	41
42	CUT_PRESS+	042 GRY	42
43	CUT_PRESS-	043 GRY	43
44	GND	044 GRY	44
45	GND	045 GRY	45
46	+12VA	046 GRY	46
47	CUT2	047 GRY	47
48	UTIL2	048 GRY	48
49	CUT1	049 GRY	49
50	UTIL1	050 GRY	50

PNEUMATICS TRANSDUCER
INTERFACE PCB
ABCP1

FAN
M1J1

1	+24V	RED	1	+24V
2	TACH	WHT	2	TACH
3	PWM	VIO	3	PWM
4	RETURN	BLU	4	RETURN

POWER CONTROL PCB
A3AP9

W112 - Console 212-2604-001 Cable, Fan

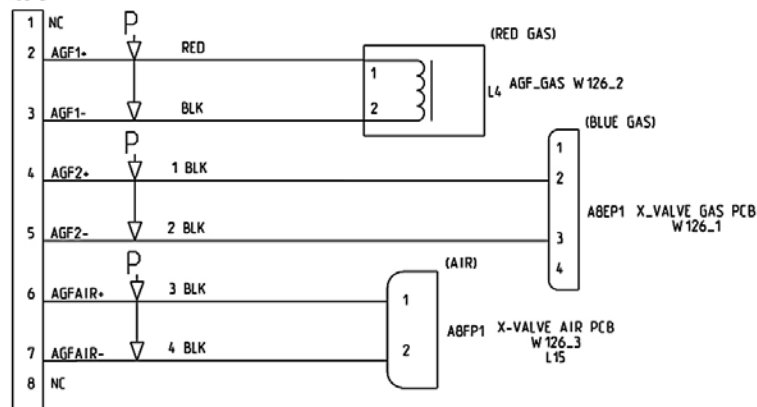
PNEUMATIC TRANSDUCER
INTERFACE PCB
ABC P2



FORCEPS VALVE
L10

W125, 129, 130 - Console 212-2591-001 Cable, SMC Valve

PNEUMATIC TRANSDUCER
INTERFACE PCB
ABCP3

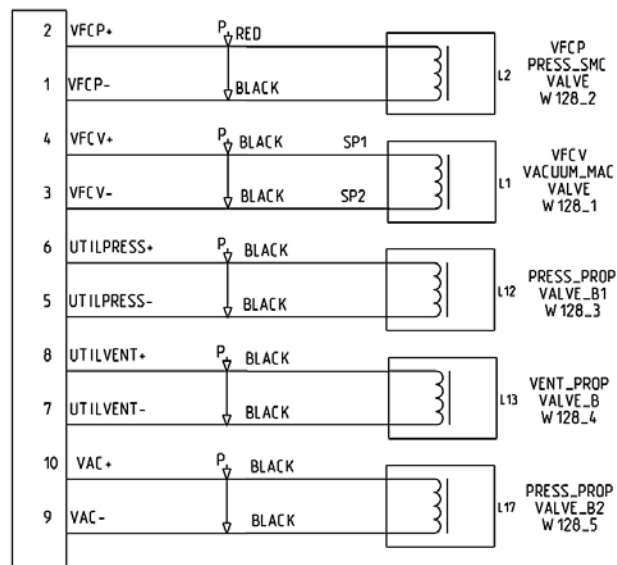


W126 - Console 212-2747-001 Cable, W126

W122 - Console 212-2596-001 Cable, Pneu, Interface

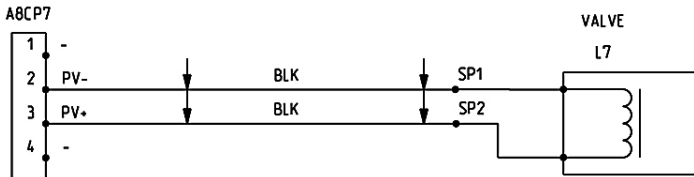
Cables, Interconnect, *Constellation** Vision System

PNEUMATICS
TRANSDUCER
INTERFACE PCB
A8CP4



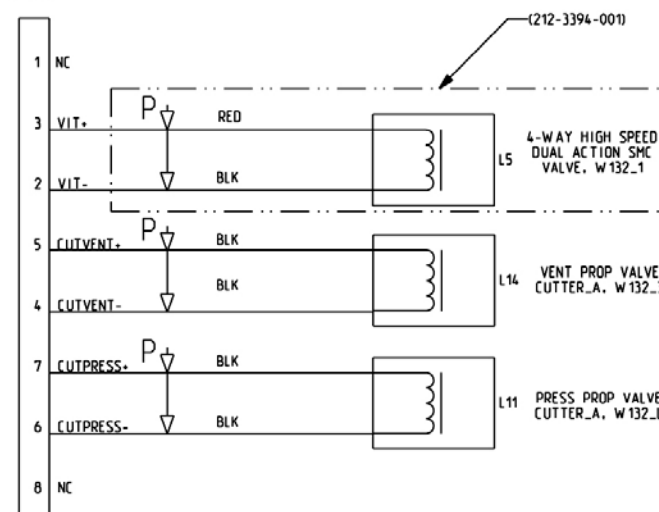
W128 - Console 212-2748-001 Cable, W128

PNEUMATICS TRANSDUCER
INTERFACE PCB
A8CP7



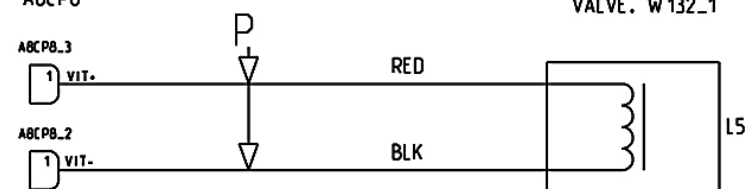
W131 - Console 212-2594-001 Cable, Vit

PNEUMATICS
TRANSDUCER
INTERFACE PCB
A8CP8



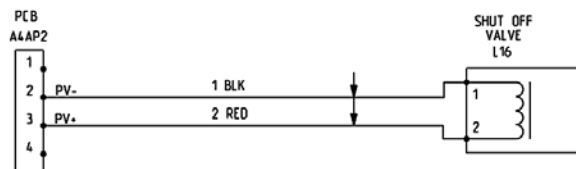
W132 - Console 212-3395-001 Cable, Assy, VIT Valves

PNEUMATICS
XDCR INTERFACE PCB
A8CP8



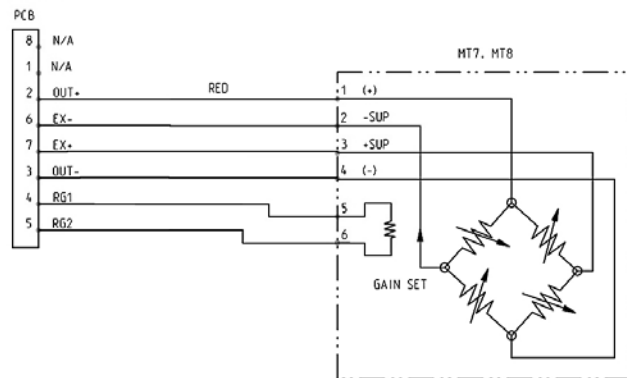
W132 - Console 212-3394-001 Cable, Assy, VIT Valve, L5 7500

AIR DISTRIBUTION



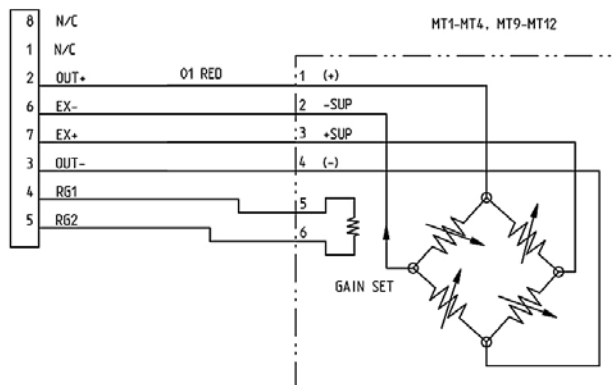
W135 - Console 212-2593-001 Cable, SMC Valve

**AIR DISTRIBUTION
INTERFACE PCB P3, P4**



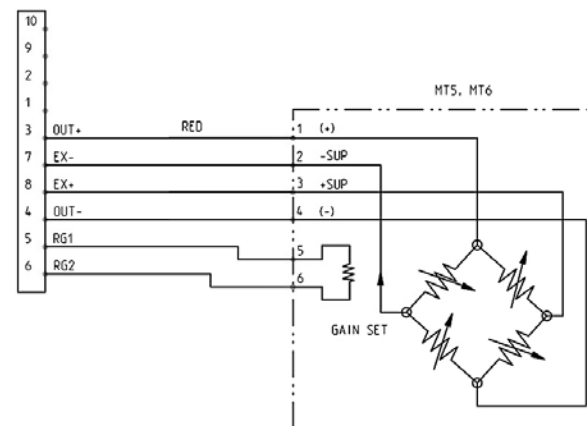
W136, 137 - Console 212-2588-001 Cable, Press Snr 300

**PNEUMATIC TRANSDUCER
INTERFACE PCB
P9 THROUGH P16**



W139-146 - Console 212-2590-001 Cable, Press Snr 100

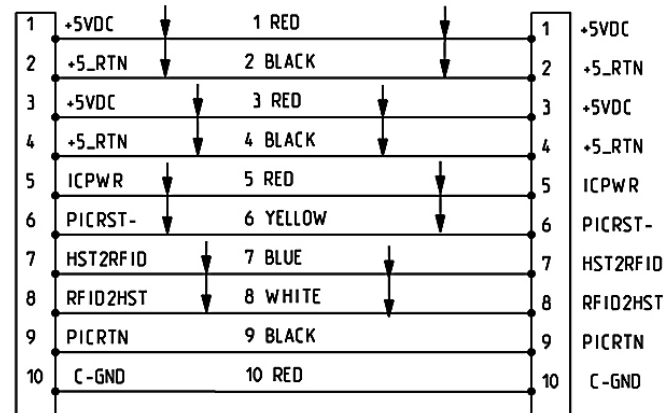
**PNEUMATIC TRANSDUCER
INTERFACE PCB
P17, P18**



W147, 149 - Console 212-2589-001 Cable, Press Snr 30

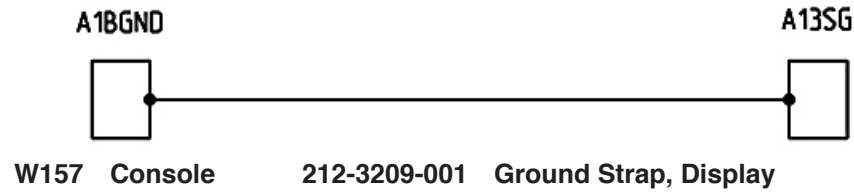
**PNEUMATICS
PCBA
A8AP6**

**PNEUMATIC RFID
PCB
A8DP1**

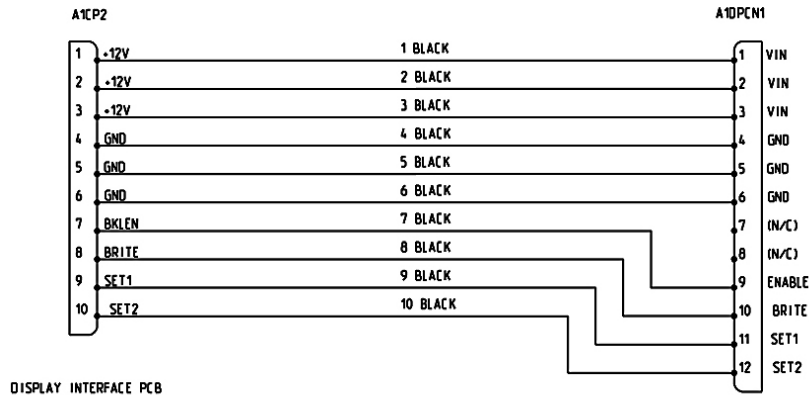
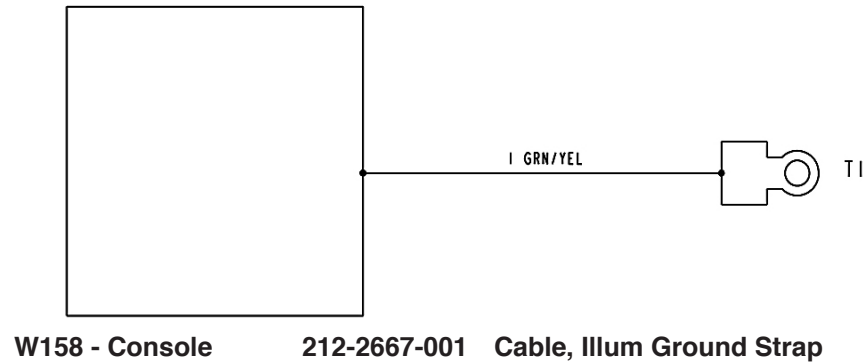


W148 - Console 212-2595-001 Cable, RFID

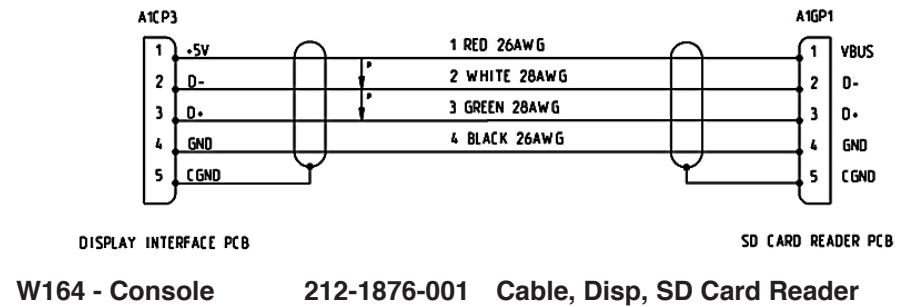
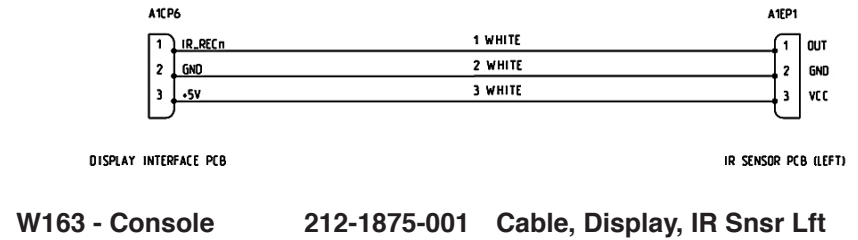
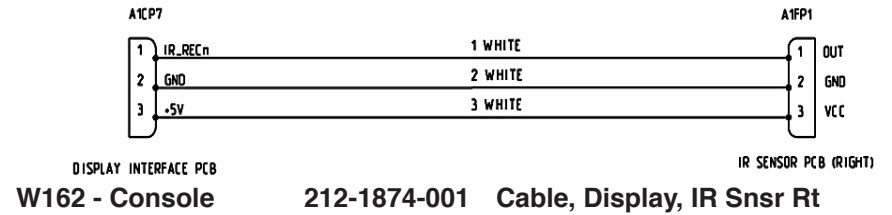
Cables, Interconnect, *Constellation Vision System**



TT ILLUM INTERFACE PCB
212-2360-501



W161 - Console 212-1873-001 Cable, Display, BLT Invert



W166 / W167
AZ0P4 / AZ0P5
MOTHERBOARD

1	TMDS_DATA_2+	RED
3	TMDS_DATA_2-	WHITE
2	TMDS_DATA_2_SHIELD	
4	TMDS_DATA_1+	GREEN
6	TMDS_DATA_1-	WHITE
5	TMDS_DATA_1_SHIELD	
7	TMDS_DATA_0+	BLUE
9	TMDS_DATA_0-	WHITE
8	TMDS_DATA_0_SHIELD	
10	TMDS_CLOCK+	BROWN
12	TMDS_CLOCK-	WHITE
11	TMDS_CLOCK_SHIELD	
13	CEC	RED
14		PURPLE
15	DDC_CLOCK	ORANGE
16	DDC_DATA	YELLOW
17	DDC_SHIELD	PINK
18	+5V_POWER	GRAY
19	HOT_PLUG_DETECT	WHITE

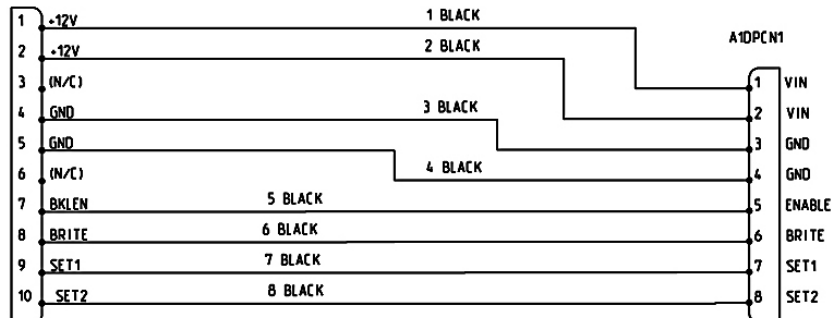
W166 / W167
AZK_HDMI_IN / AZK_HDMI_OUT
EXPANSION PANEL

1	TMDS_DATA_2+
3	TMDS_DATA_2-
2	TMDS_DATA_2_SHIELD
4	TMDS_DATA_1+
6	TMDS_DATA_1-
5	TMDS_DATA_1_SHIELD
7	TMDS_DATA_0+
9	TMDS_DATA_0-
8	TMDS_DATA_0_SHIELD
10	TMDS_CLOCK+
12	TMDS_CLOCK-
11	TMDS_CLOCK_SHIELD
13	CEC
14	RESERVED
15	DDC_CLOCK
16	DDC_DATA
17	DDC_SHIELD
18	+5V_POWER
19	HOT_PLUG_DETECT

W166 (HDMI IN)
W167 (HDMI OUT)

W166, 167 212-3426-001 Cable, Assy, HDMI Panel

A1CP2



DISPLAY INTERFACE PCB

BACKLIGHT INVERTER PCB

W168 212-3401-001 Cable, Assy, BLT Invert

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SECTION SIX PARTS LISTS & DRAWINGS

CONSOLE		
DESCRIPTION	PART NUMBER	PAGE #
Assy, Footpedal, Six Switch	212-1083-XXX X	6.2
Assy, Heel, Footswitch, Right	212-3386-XXX B	6.13
Assy, Table Top Console	212-5002-XXX BC	6.15
Assy, Arm, Display (reference only-not available for order)	212-3206-XXX F	6.33
Assy, Display, LCD 17 In (Old)	212-3211-XXX H	6.36
Assy, Display, LCD 17 In (New)	212-3398-XXX E	6.41
Assy, Articulating Arms, Display	212-1220-XXX R	6.46
Assy, Module, Host	212-1010-XXX AK	6.55
Assy, Panel, Exp (Old Wifi)	212-1036-XXX D	6.74
Assy, Module, Host (CR3 and above)	212-3408-501 H	6.76
Assy, Panel, Exp (New Wifi, Needs Dongle)	212-3352-XXX C	6.94
Assy, Power Controller, Tabletop	212-1016-XXX G	6.96
Assy, Module, Pneumatic	212-1023-XXX AK	6.103
Assy, Module, U/S-Diat Aqua	212-1037-XXX L	6.124
Assy, Module, US/Diat IOL (Optional on systems with CR4 software and above)	212-3564-XXX A	6.128
Assy, Filter, Oil/Air Dryer	212-1040-XXX N	6.131
Assy, Illuminator, Metal Halide	212-1047-XXX Y	6.140
Assy, Ballast, Illum Xenon	212-1758-501 F	6.144
Assy, Enclosure, Optics	212-2235-502 K	6.147
Assy, Fluidics	212-3245-XXX V	6.152
	212-1445-XXX T	6.164
Assy, Manifold, Primary	212-2255-XXX R	6.178
Assy, Manifold, Pincher	212-2173-XXX H	6.194
Assy, Manifold, Infusion	212-2172-XXX J	6.199
Assy, Manifold, Asp Fluidics	212-2154-XXX E	6.204
Assy, Faceplate	212-3150-501 F	6.209
	212-3050-501 A	6.211
Assy, Actuator, Mounting	212-2362-501 D	6.213

CONSOLE		
DESCRIPTION	PART NUMBER	PAGE #
Assy, Wheel, Actuator	212-2256-XXX D	6.218
Assy, Actuator, Latch Illum	212-2187-501 D	6.221
Assy, Fan, TT Illum	212-2875-501 C	6.224

BASE		
DESCRIPTION	PART NUMBER	PAGE #
Assy, Gas AGF, External	212-2981-XXX F	6.226
Assy, Base, Premium	212-5003-XXX V	6.229
Assy, Laser	212-1007-XXX R	6.243
Assy, Core Module	562-1034-XXX AW	6.247
Assy, Core Module	562-1564-XXX H	6.251
Assy, Engine, Laser	562-1041-XXX AB	6.255
Assy, Illuminator, Aux	212-1008-XXX AA	6.258
Assy, Ballast, Aux Illuminator	212-2150-501 F	6.265
Assy, Power Dist, Cart	212-2164-XXX F	6.268
Assy, Bracket, Upper Cyl Mtg	212-2342-XXX D	6.271
Assy, Panel, Conn Duct Illum	212-2472-XXX F	6.272
Assy, Actuator, Latch Illum	212-2715-501 B	6.274
Assy, Arm, Tray	212-1004-XXX L	6.277
Assy, Arm, Lower	212-1191-XXX E	6.283
Assy, Tray	212-1158-XXX G	6.290
Assy, Arm, Upper	212-1186-XXX M	6.297

212-1083-501 ASSY, FOOTPEDAL, SIX SWITCH


ITEM #	PART NUMBER	DESCRIPTION	QTY
001	040-049	TUBING,HEAT SHRINK,.063 ID BLK	1
002	200-1337-001	GEAR,SPUR,GEARMOTOR MODIFIED	1
003	212-2725-001	PLATE,COVER,BACKUP FOOTSWITCH	2
004	200-1380-001	SUPPORT,ENCODER,FOOTSWITCH	1
005	200-1391-001	GEAR,ACTUATOR,ENCODER MODIFIED	1
006	200-1393-001	GEAR,MOTOR/TREADLE,MODIFIED	1
007	200-1401-001	PLATE,SWITCH	1
008	200-1402-001	BEARING,SPRING	1
009	200-1419-001	BRACKET,INSULATION	1
010	200-1494-001	PLATE,CONTACT	1
011	200-1495-001	PLATE,STOP	1
012	200-1664-002	TREADLE,CASTING,FOOTSWITCH	1
013	200-1733-002	COVER,SWITCH,R DIE CAST MACH	1
014	200-1735-002	COVER,SWITCH,L DIE CAST MACH	1
015	200-2345-001	BASEPLATE ASSY,HOUSING	1
016	200-3029-001	ARM,LEVER,SWITCH ACTUATOR	2
017	200-3034-002	SHAFT,TENSION,ADJUSTMENT	1
018	200-3035-001	PLUNGER,SPRING RETURN	1
019	200-3036-001	BLOCK,TENSION ADJUSTMENT	1
020	200-3060-002	HANDLE,FOOTPEDAL	1
021	200-3168-001	SUPPORT,WIRE,FOOTPEDAL	1
022	212-2726-001	GASKET,COVER,FOOTSWITCH	2
023	202-1766-001	PAD,SOLE,FOOTPEDAL	1
024	202-1767-001	PAD,HEEL,FOOTPEDAL	1
025	202-1853-001	LEVER/SHAFT,PINNED,ASSY	1
026	212-2562-002	LABEL,CONST,FOOTSWITCH IEC	2
027	202-1496-004	HOUSING,FOOTSWITCH,BOTH SIDES	1
029	212-1480-551	ASSY,PCB,FOOTSWITCH	1
030	212-1666-003	CABLE,FOOTSW,CONST 18.5FT W47	1
031	212-1669-002	CABLE ASSY,GEARMOTOR,12 WIRE	1
032	212-3386-501	ASSY,HEELSWITCH,CVS RIGHT	1
033	212-3386-502	ASSY,HEELSWITCH,CVS LEFT	1
034	212-3315-001	GUARD,SWITCH,FRONT RT MACH	1
035	212-3315-003	GUARD,SWITCH,FRONT LFT MACH	1
036	212-1864-001	CABLE ASSY,MICROSWITCH	1

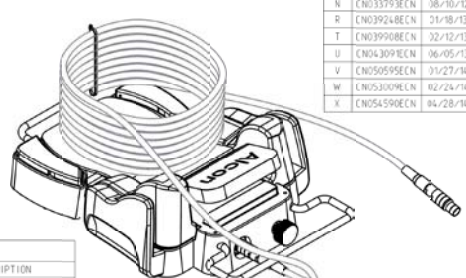
ITEM #	PART NUMBER	DESCRIPTION	QTY
037	212-1955-001	CABLE ASSY,FOOTSWITCH,INTERNAL	1
038	262-069	SWITCH,PROBE & RECEPTACLE	2
039	263-122	SWITCH,PUSHBUTTON,SPST WTRPRF	4
040	280-003	ENCODER,OPTICAL,PNL 500 CPR	1
041	691-137	SPRING,CPRSN,.75X.360 DIA SST	1
042	691-191	SPRING,.58X.75X2.75,EXT MW	2
043	691-193	SPRING,M5X.56X1.25,HELIX MACH	2
044	691-207	SPRING,CPRSN,.59X.72X.75 MW	2
045	711-025	GEAR,SPUR,32T 64 PITCH SST	1
046	773-034	RING,RETAINING,.303 SHAFT	1
047	774-032	O-RING,.239X.070,NITRILE	1
048	774-122	O-RING,.176X.31X.070,NITRILE	2
049	775-012	GASKET,M5,.20X.39X.12 NYLON	2
050	797-083	WASHER,INT LOCK.12X.27X.02 SST	1
051	798-014	WASHER,FLAT,NO.10 .062 THK NYL	3
052	800-004	WASHER,SPLITLOCK,M4 SST	4
053	800-107	WASHER,EXT LOCK,M6 SST	4
054	801-003	WASHER,FLAT,M3 SST	2
055	801-004	WASHER,FLAT,M4 SST	4
056	803-004	NUT,HEX,M4X0.7 SST	4
057	805-041	SETSCREW,SKT HD,FLT M4X6 SST	2
058	805-183	SETSCREW,SKT HD,CONE M4X4 SS	2
059	805-045	SETSCREW,SKT HD,FLT M4X16 SST	2
060	807-186	SCREW,CAP HD SKT,M3X6 SST	5
061	807-003	SCREW,CAP HD SKT,M3X8 SST	9
062	807-012	SCREW,CAP HD SKT,M4X6 SST	2
063	807-013	SCREW,CAP HD SKT,M4X8 SST	3
064	807-028	SCREW,CAP HD SKT,M5X16 SST	2
065	807-043	SCREW,CAP HD SKT,M6X16 SST	4
066	807-143	SCREW,CAP HD SKT,M2.0X8 SST	2
067	809-002	SCREW,BTN HD SKT,M3X8 SST	2
068	809-007	SCREW,BTN HD SKT,M4X10 SST	18
069	811-009	SCREW,FLAT HD SKT,M4X8 SST	3
070	814-019	SCREW,SHLDR,SKT HD M5X6.013 SS	5
071	891-013	LUBRICANT, GREASE MULTI-PURPOSE	AR
072	891-019	LUBRICANT,SEALANT,VALVE	AR

ITEM #	PART NUMBER	DESCRIPTION	QTY
073	212-2207-001	HANDLE,FRONT,FOOTSWITCH	1
074	027-002	CABLE TIE,1.25X5.50L,NYL	2
075	027-003	CABLE TIE,.625X3.50L,NYLON	3
076	027-004	CABLE TIE,2.00X8.00L,NYL	1
077	210-2152-001	INSULATOR,BLOCK,TENSION ADJUST	1
078	200-1671-001	GASKET,HEEL SWITCH	2
079	042-018	TUBING,PVC,.186X.226 CLR	1
080	212-3382-001	HOUSING,HEELSWITCH,BASE PLATE	2
081	212-3420-001	GASKET,HEELSWITCH,BASE	2
082	797-111	WASHER,LOCK,M18 INT BRZ/NKL	1
083	040-048	TUBING,HEAT SHRINK,.187 ID BLK	AR
084	892-346	ADHESIVE,RTV,SILICONE	AR
085	805-185	SETSCREW,SKT HD,CONE M4X6 SS	2
086	892-042	ADHESIVE,THREADLOCKER,242 BLUE	AR
087	807-172	SCREW,CAP HD SKT,M4X6 SST	2

AR = As Required

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN INCHES.
TOLERANCES: .XXX ± .01
.XXX ± .005
ANGLE ± 1°
3. FOOT PEDAL ASSEMBLY PROCEDURE
A. MANUFACTURE PER PROCEDURE MAP 992-2120-02C.
B. SUB-ASSEMBLY AND ASSEMBLY STEP SEQUENCES MAY BE ALTERED TO ACCOMMODATE PRODUCTION FLOW.
4. PRINT PRODUCT LABELS (ITEM 26) PER MAP 992-0000-070.
5. CURSORY INSPECT, CLEAN WITH ISOPROPYL ALCOHOL AS REQUIRED.
6. FOR KANBAN: MOVE COMPLETED ASSEMBLY TO KANBAN LOCATION FOR FINISHED GOODS PACKAGE PER 8065750977 DRAWING
7. TEST PER MTP 907-2120-020.
8. COIL CABLE (ITEM 30) ON TOP OF FOOT SWITCH ASSEMBLY.
9.  BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.



SEE SEPARATE PARTS LIST

TABULATION BLOCK	
PART NUMBER	DESCRIPTION
212-1083-501	ASSY.FOOTPEDAL.SIX SWITCH
212-1083-501S	ASSY.FOOTPEDAL.SIX SW FID. SVCE

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MAUFACTURER	ITEM
1	212-1083-501	ASSY.FOOTPEDAL.SIX SWITCH		

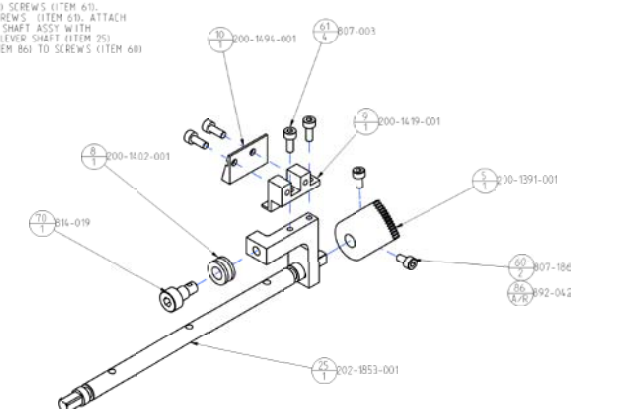
BILL OF MATERIAL

BY	DATE	DESCRIPTION	REVISION
J. ATERLEY	11/13/06	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL BE KEPT CONFIDENTIAL AND NOT BE DISCLOSED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF ALCON	
D. CHIVAREE	03/04/08		
J. FOSTER	03/04/08		
REVISION	2/23/2007		

ALCON
VISTA, CALIFORNIA 94088

DESCRIPTION: ASSY.FOOTPEDAL.SIX SWITCH
SCALE: 1:1
SHEET 1 OF 39

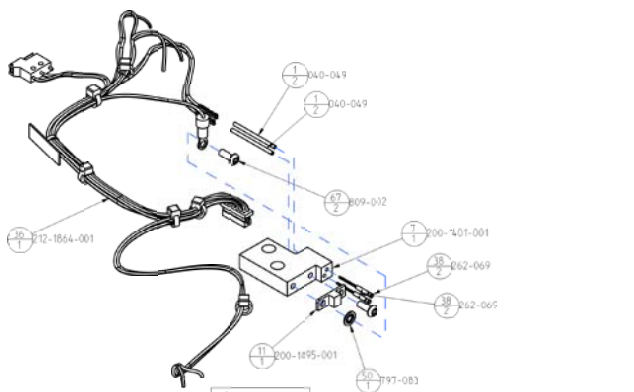
LEVER SHAFT SUB-ASSY
ATTACH PLATE (ITEM 10) TO BRACKET (ITEM 9) USING (2) SCREWS (ITEM 61).
ASSEMBLE TO LEVER SHAFT ASSY (ITEM 25) USING (2) SCREWS (ITEM 61).
BEARING (ITEM 8) TO THE LEVER SECTION OF THE LEVER SHAFT ASSY WITH
SHOULDER SCREW (ITEM 70). ATTACH GEAR (ITEM 5) TO LEVER SHAFT (ITEM 25)
USING (2) SCREWS (ITEM 61). APPLY THREAD LOCKER (ITEM 86) TO SCREWS (ITEM 61)
PRIOR TO INSTALLATION. TORQUE TO 5-10 IN/LB.



STEP 1

SCALE: 1:1
SHEET 2 OF 39

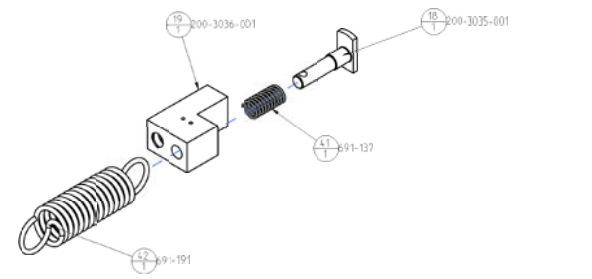
MICROSWITCH SUB-ASSY
INSTALL (2) PROBES (ITEM 38) AND (2) RECEPTACLES, INSERT INTO SWITCH PLATE (ITEM 7). ASSEMBLE STOP PLATE (ITEM 10) AND LUG FROM CABLE ASSY (ITEM 36).
USING (2) SCREWS (ITEM 67) AND (1) INTERNAL LOCK WASHER (ITEM 50). INSERT (2) PIECES OF APPROXIMATELY .75" SHINK TUBING (ITEM 11) TO WIRES # 10 & 12 OF CABLE ASSY (ITEM 36). SOLDER WIRES TO PROBE AND RECEPTACLE SWITCH (ITEM 38) PER SCHEMATIC CLEAN WITH ALCOHOL AND TISSUE. APPLY HEAT TO SHRINK WRAP TUBING (ITEM 11).



STEP 2

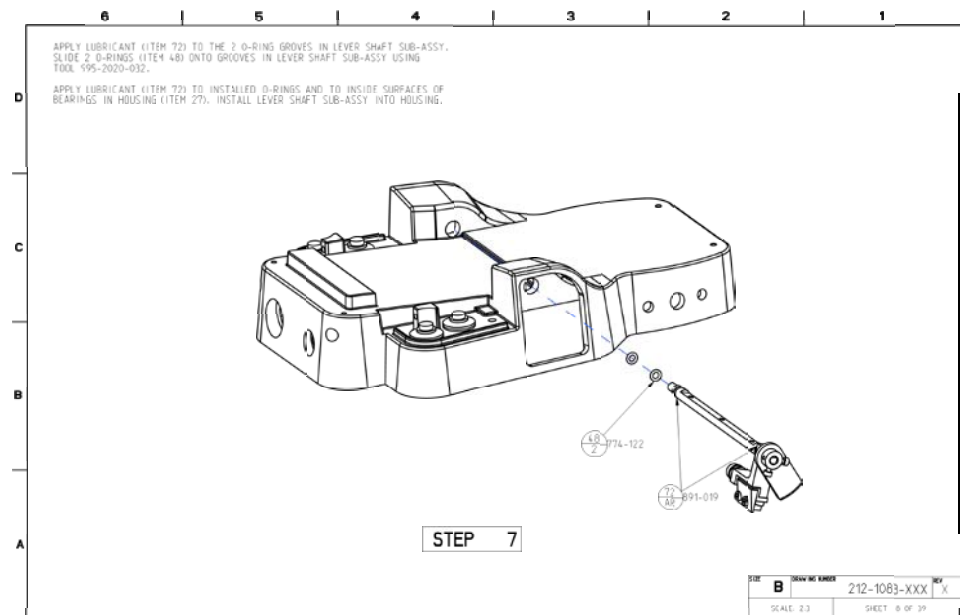
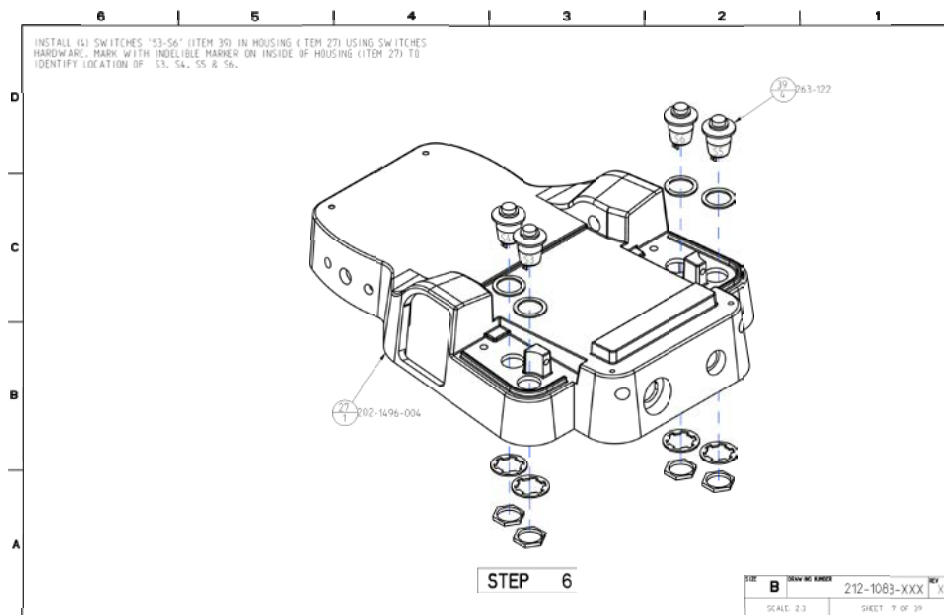
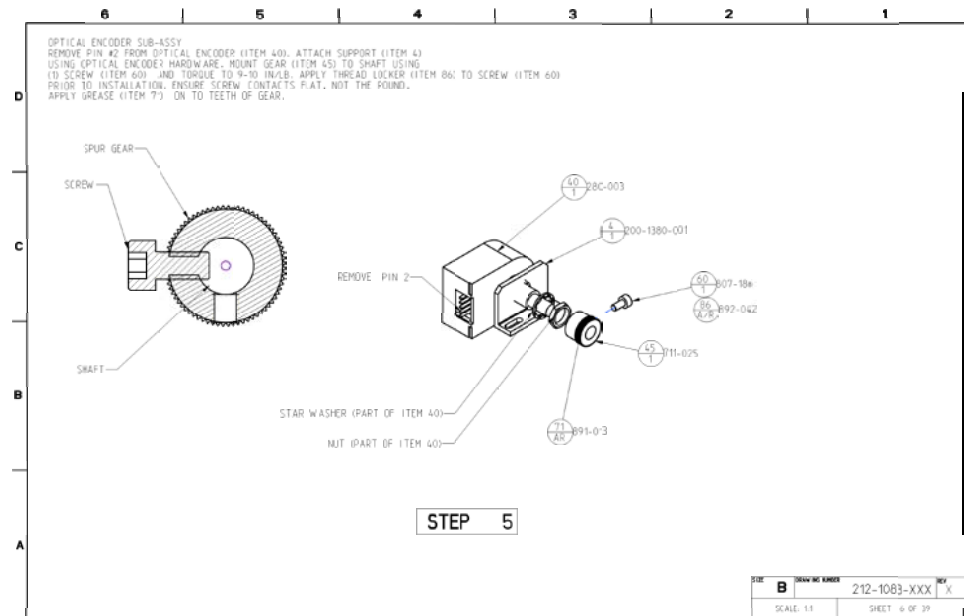
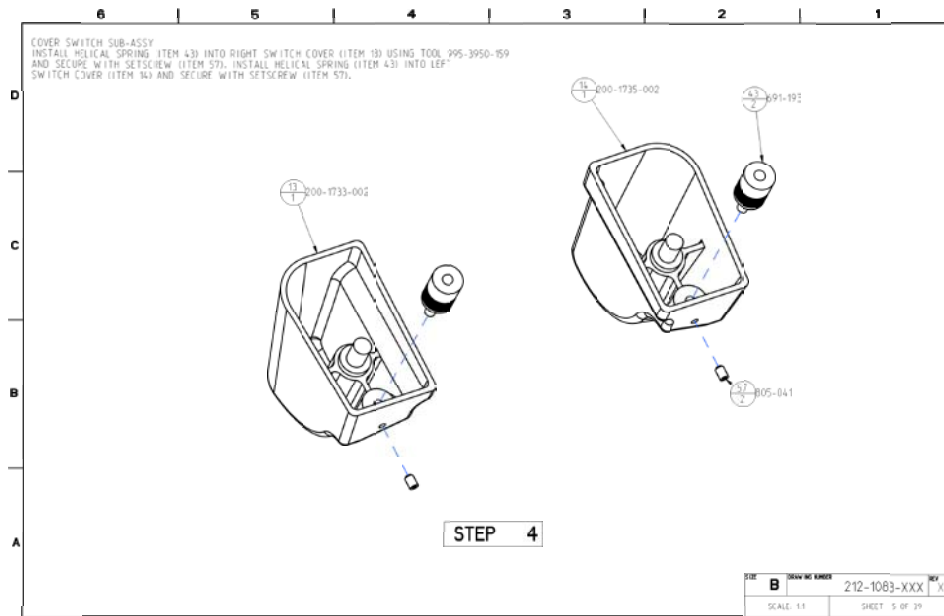
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SHEET 3 OF 39

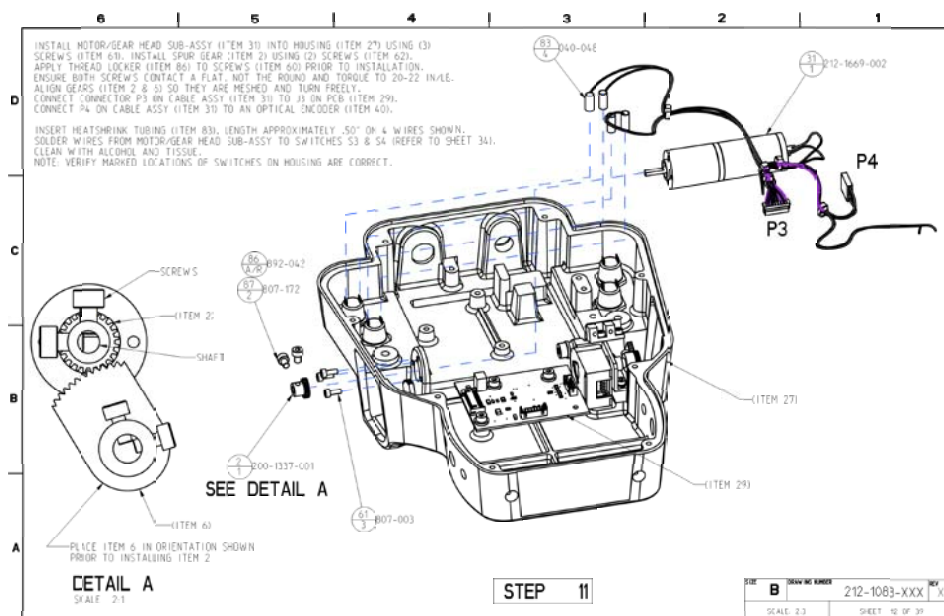
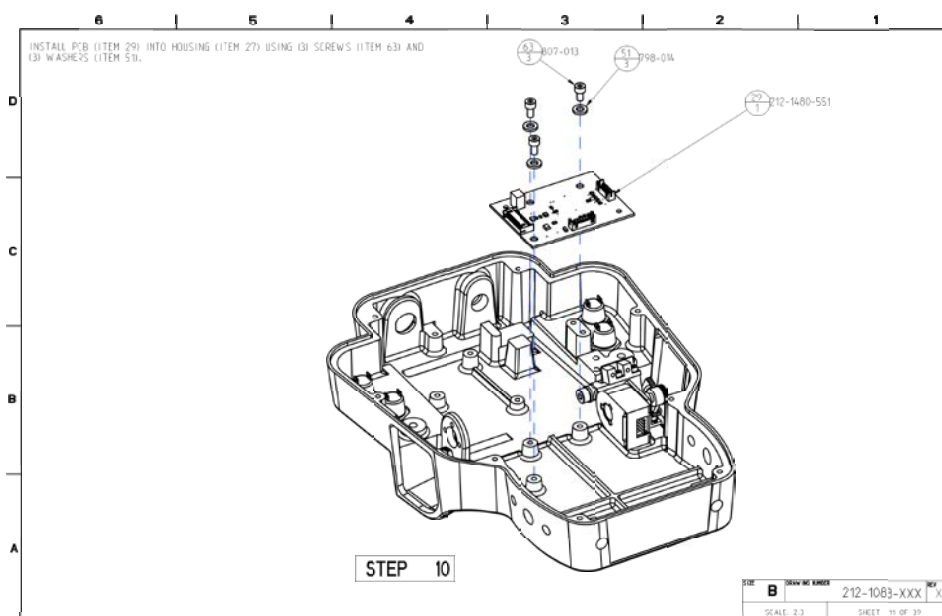
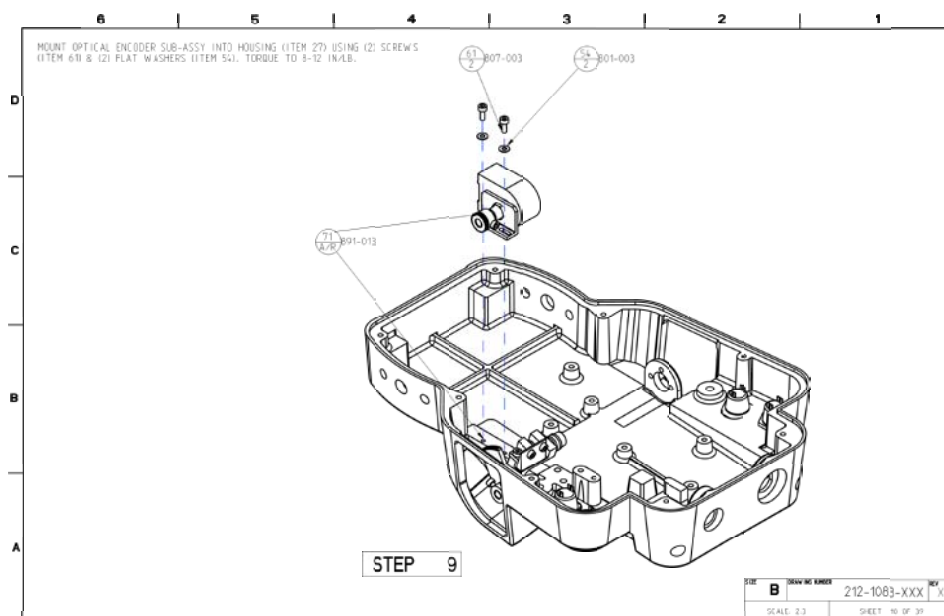
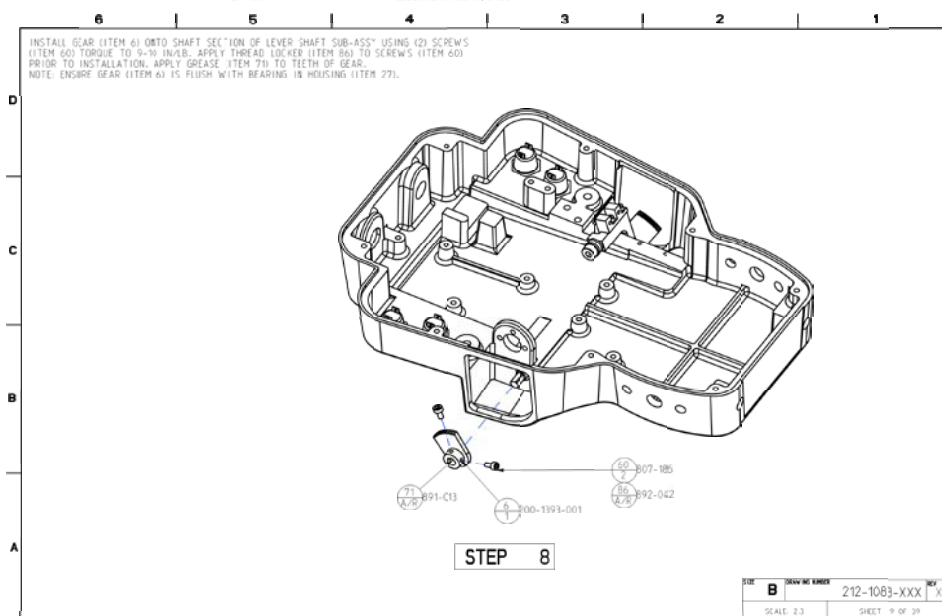
BLOCK PLUNGER SUB-ASSY
INSTALL SPRING (ITEM 4) ONTO PLUNGER (ITEM 18). ASSEMBLE PLUNGER INTO BLOCK (ITEM 19) AND SPRING (ITEM 4) THROUGH HOLE OF PLUNGER.

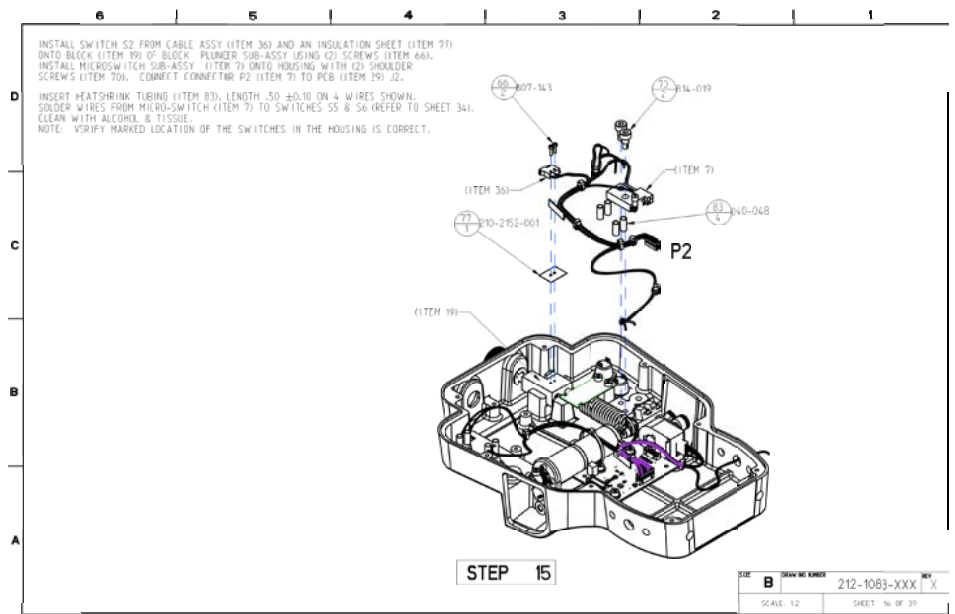
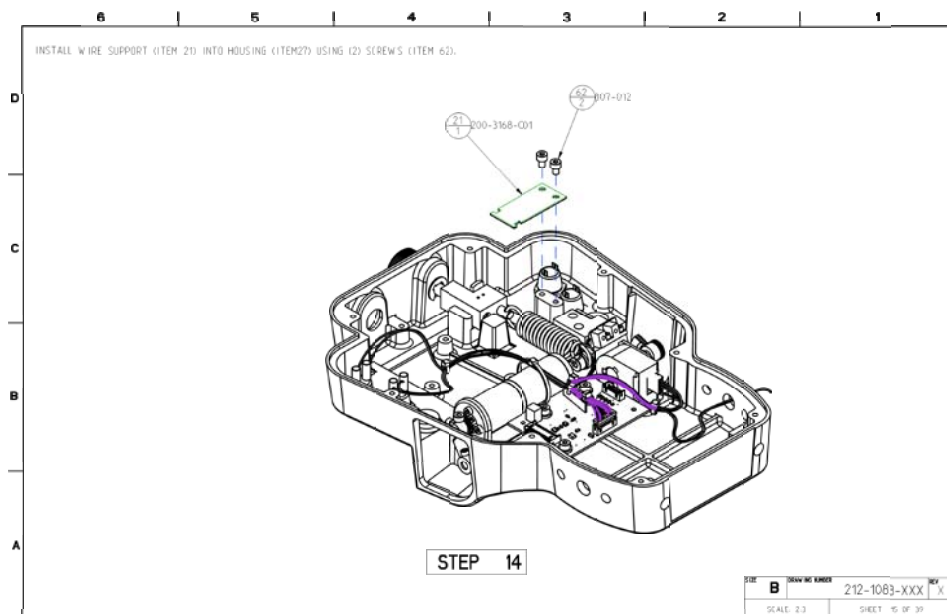
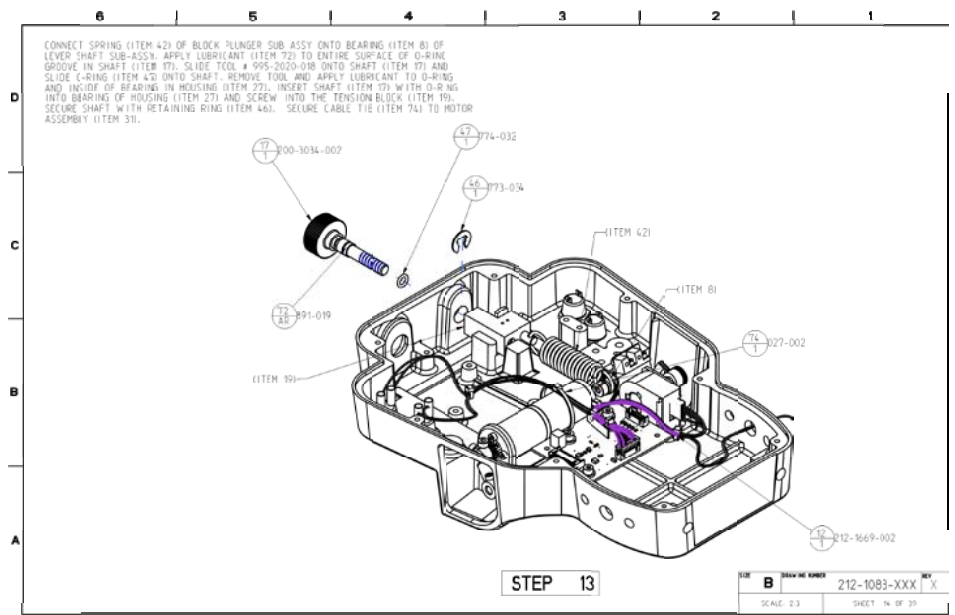
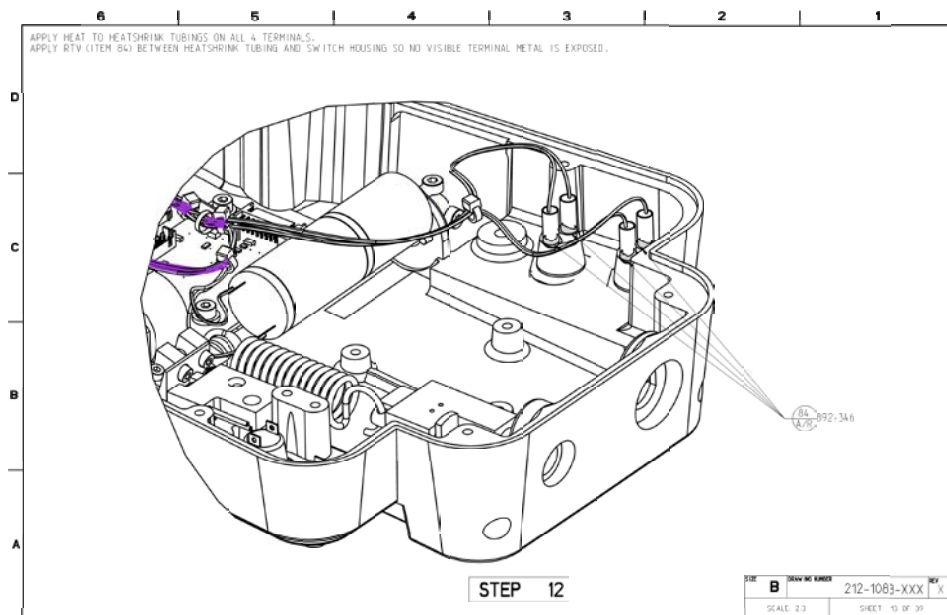


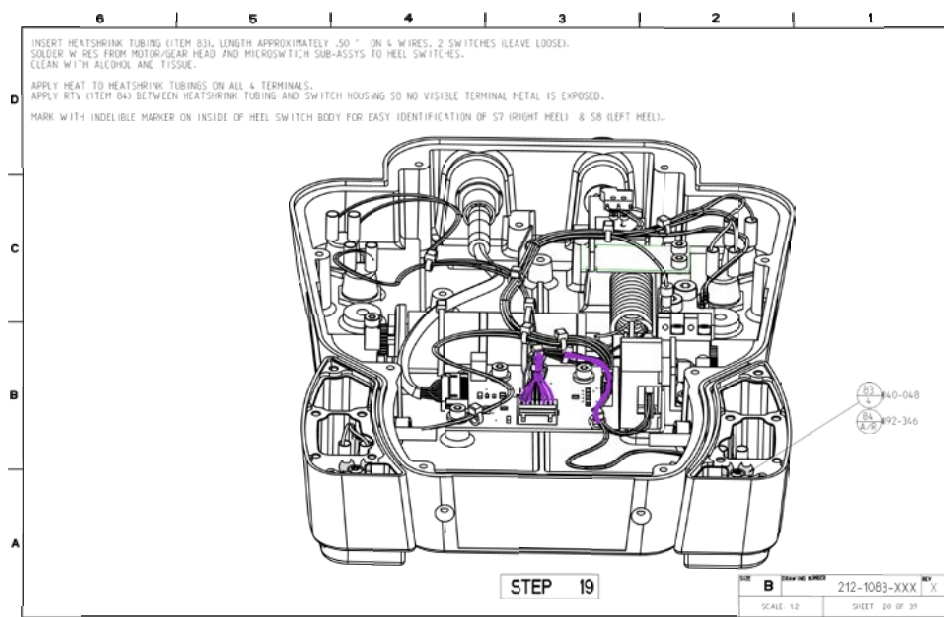
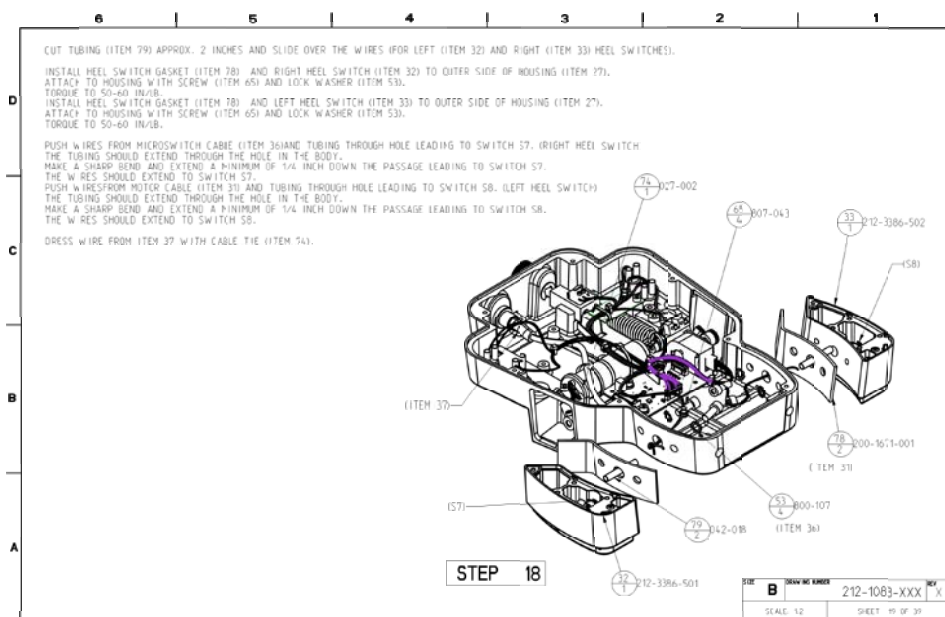
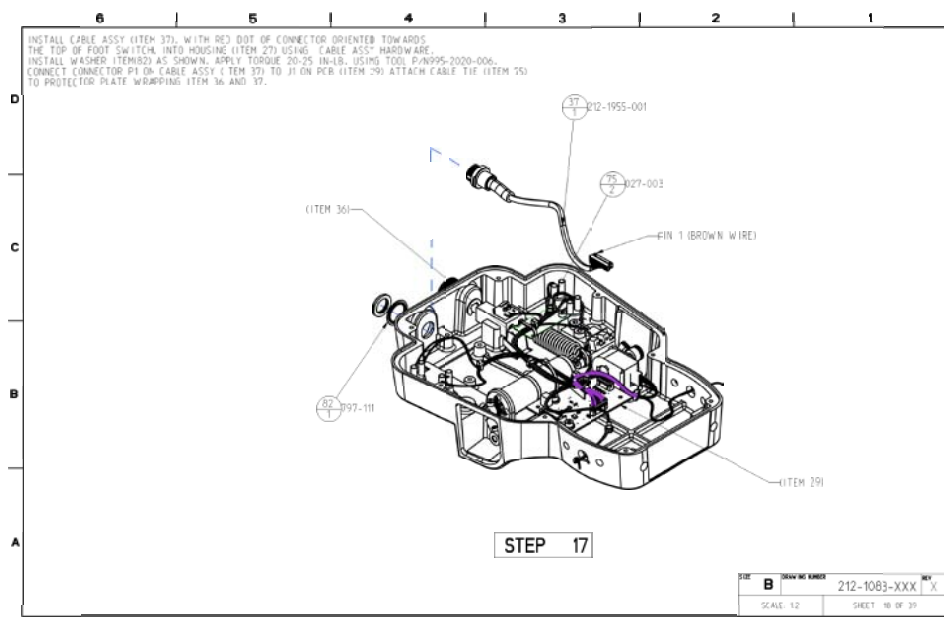
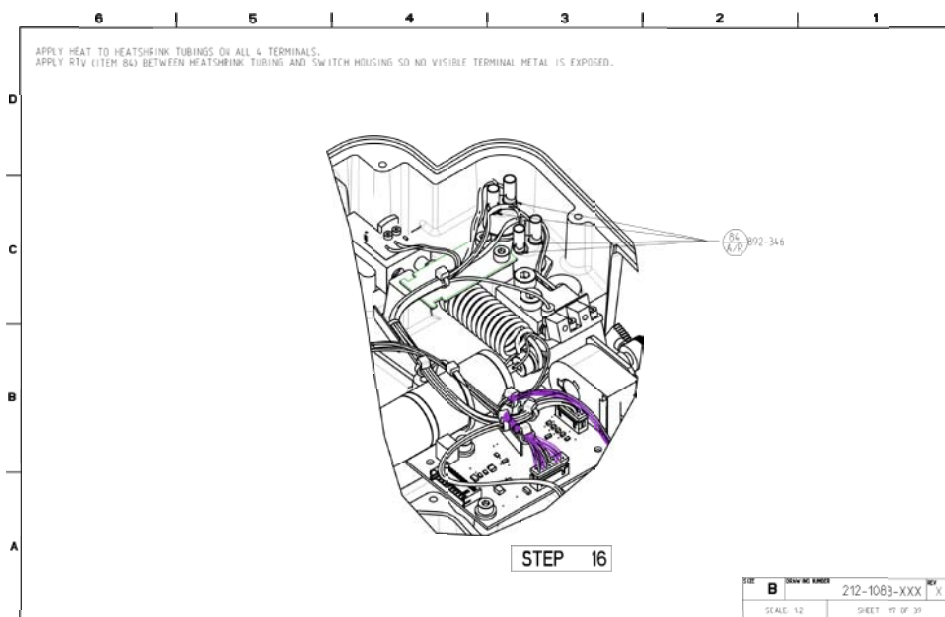
STEP 3

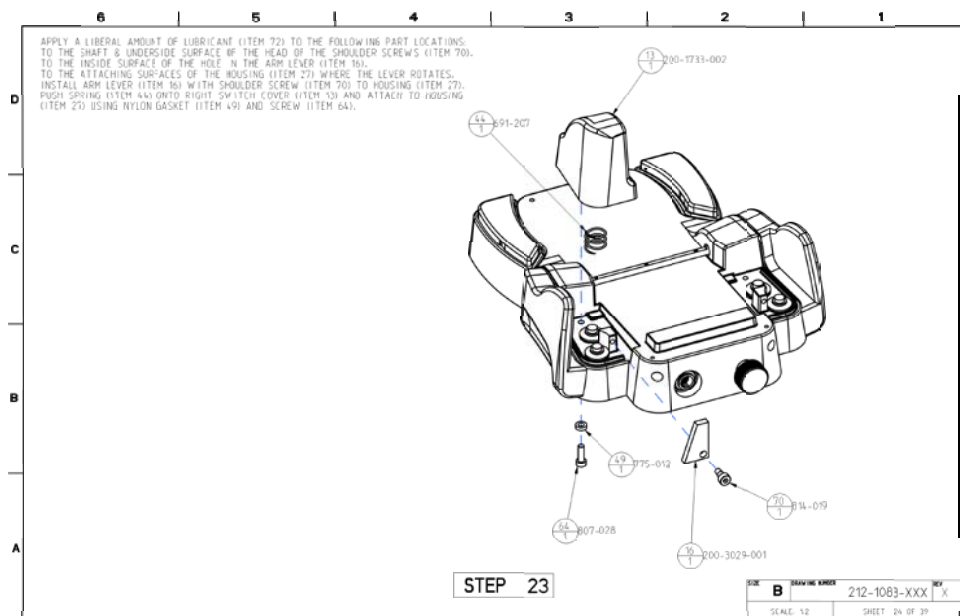
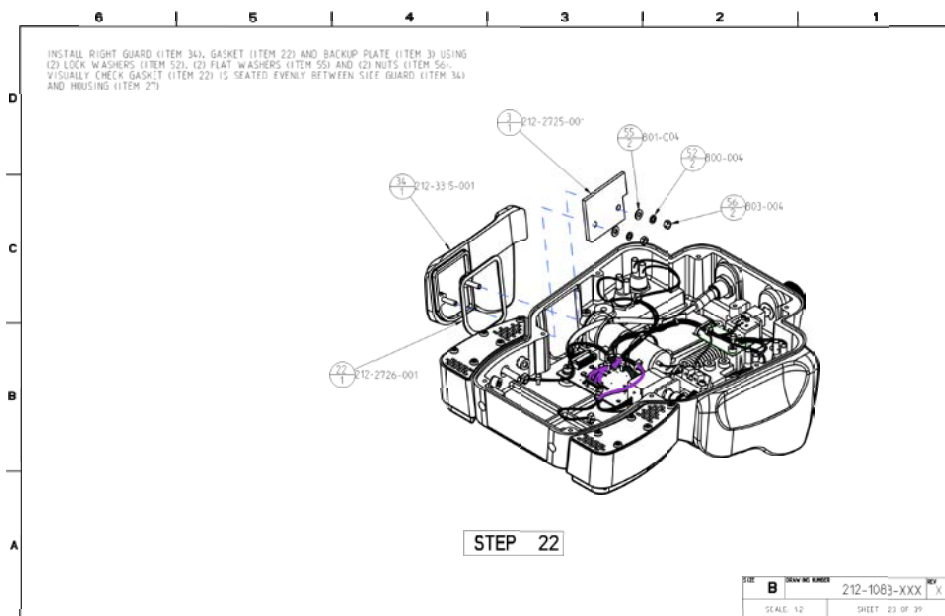
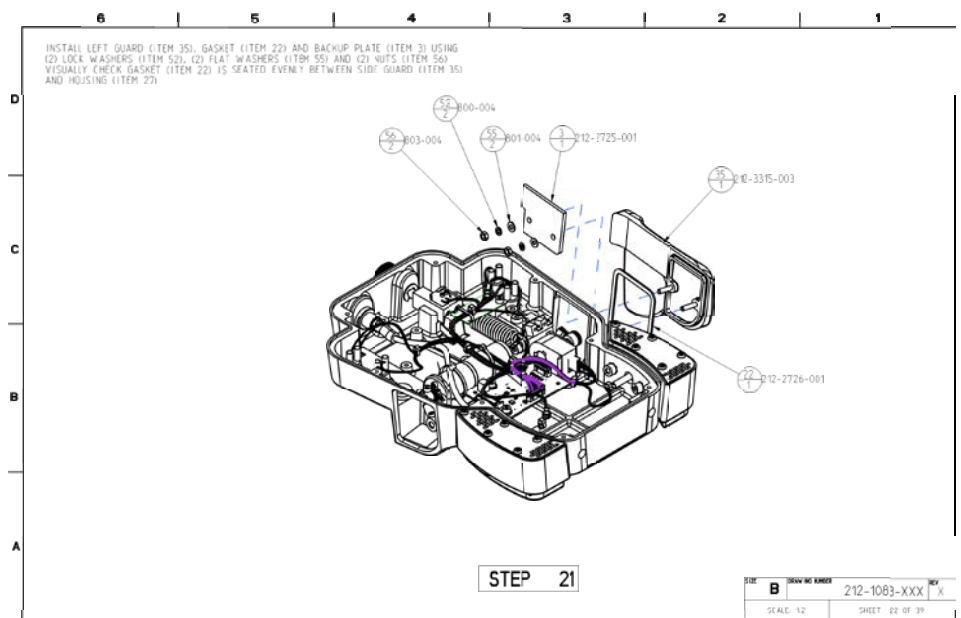
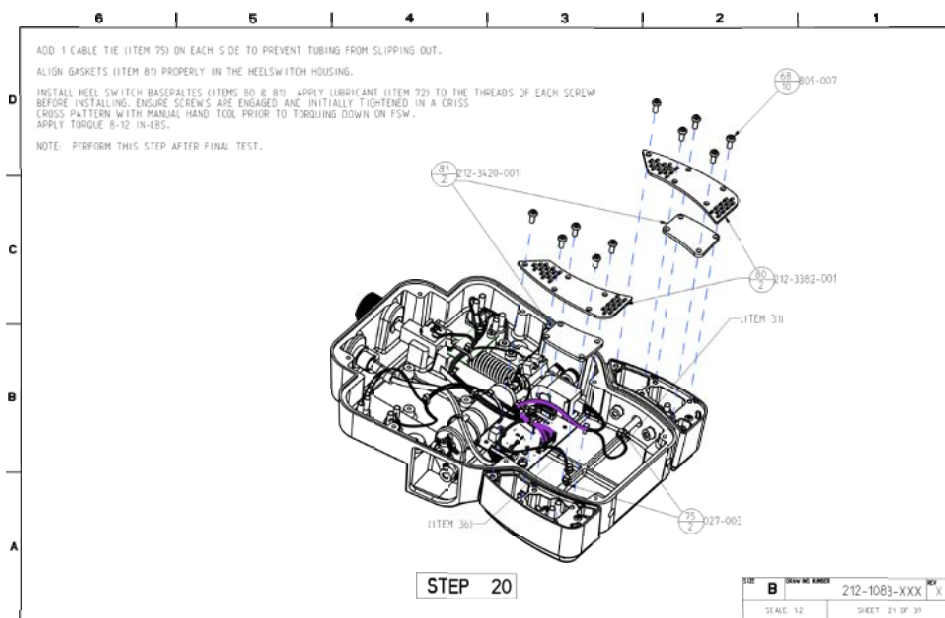
SCALE: 1:1
SHEET 4 OF 39

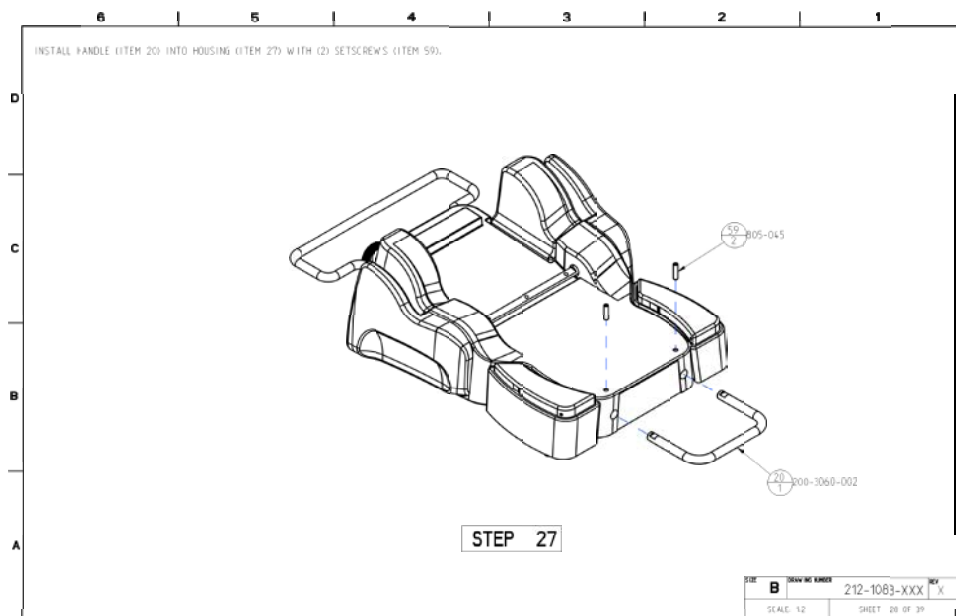
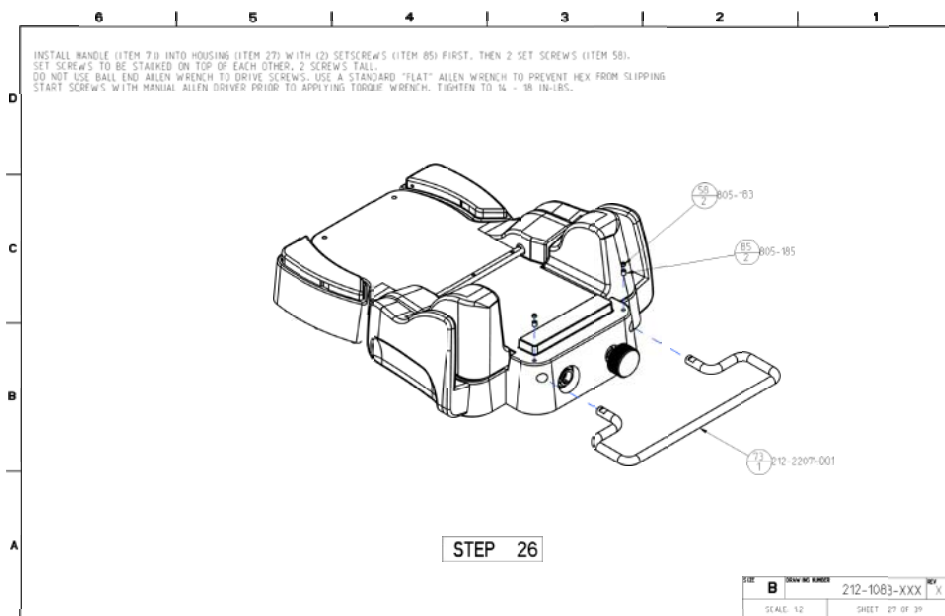
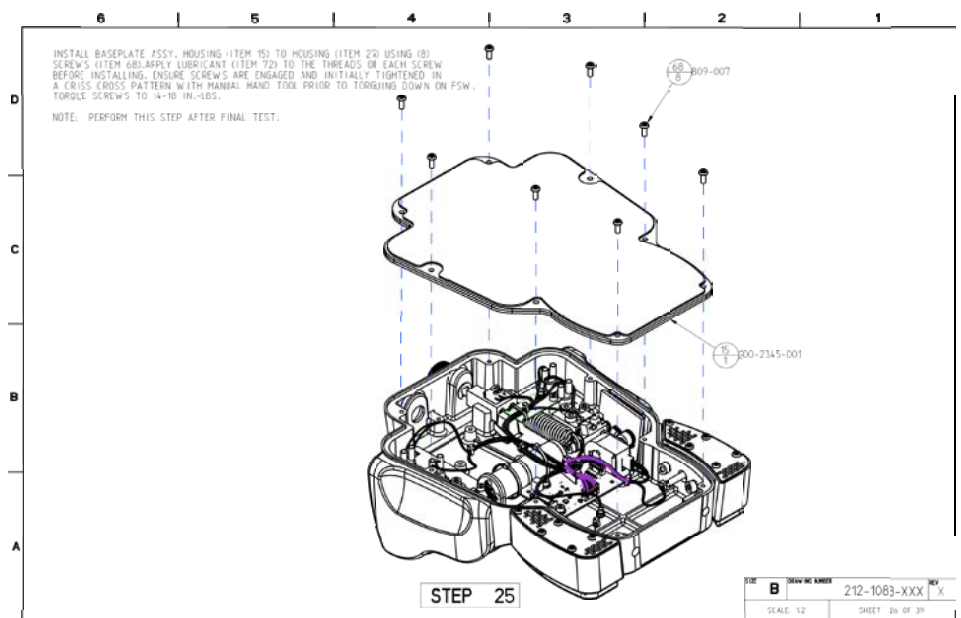
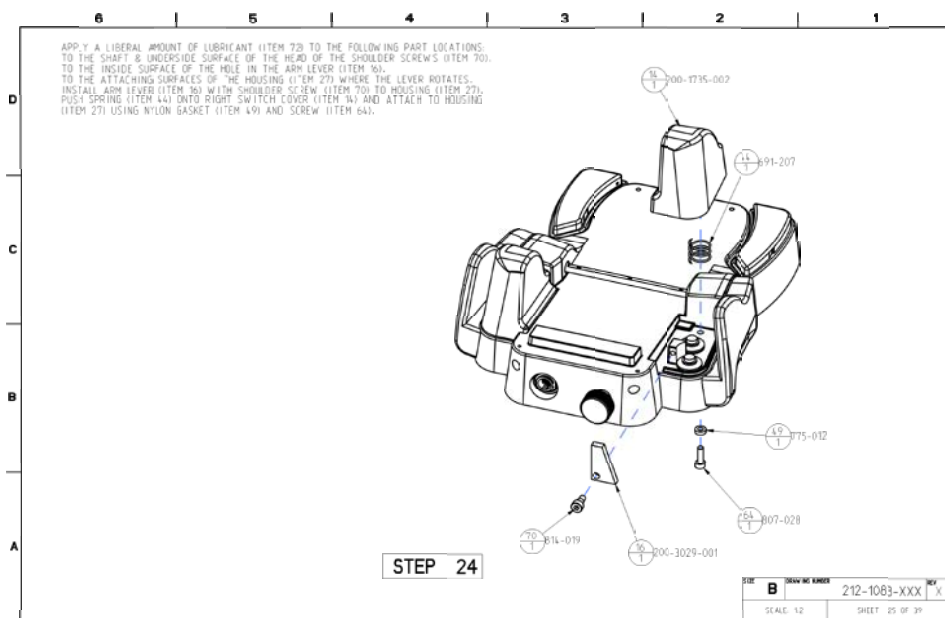


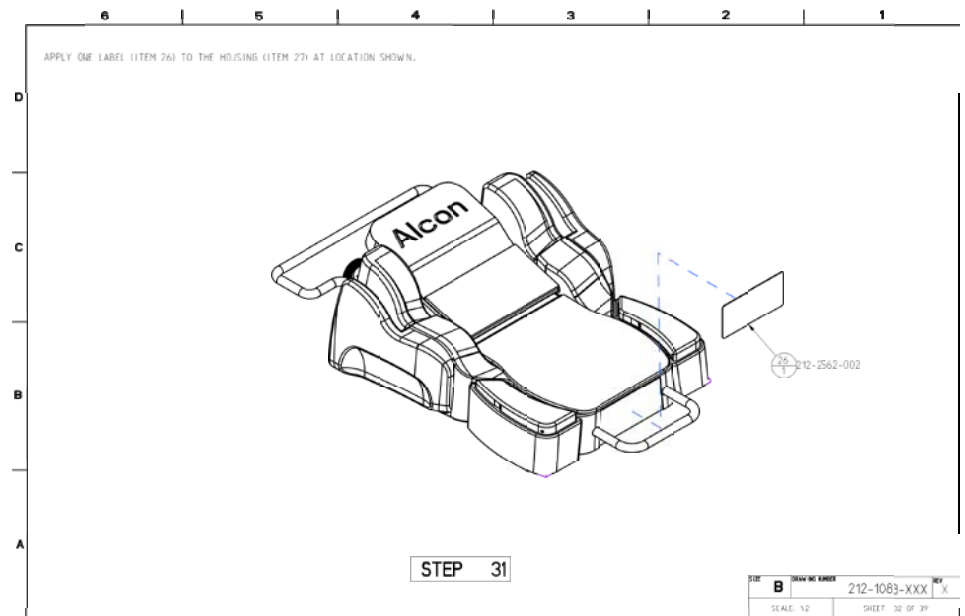
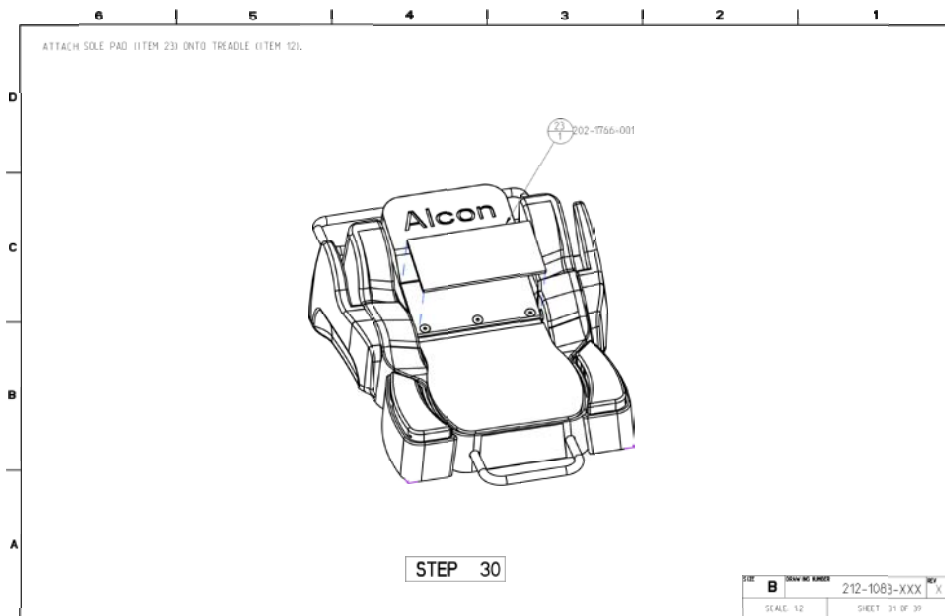
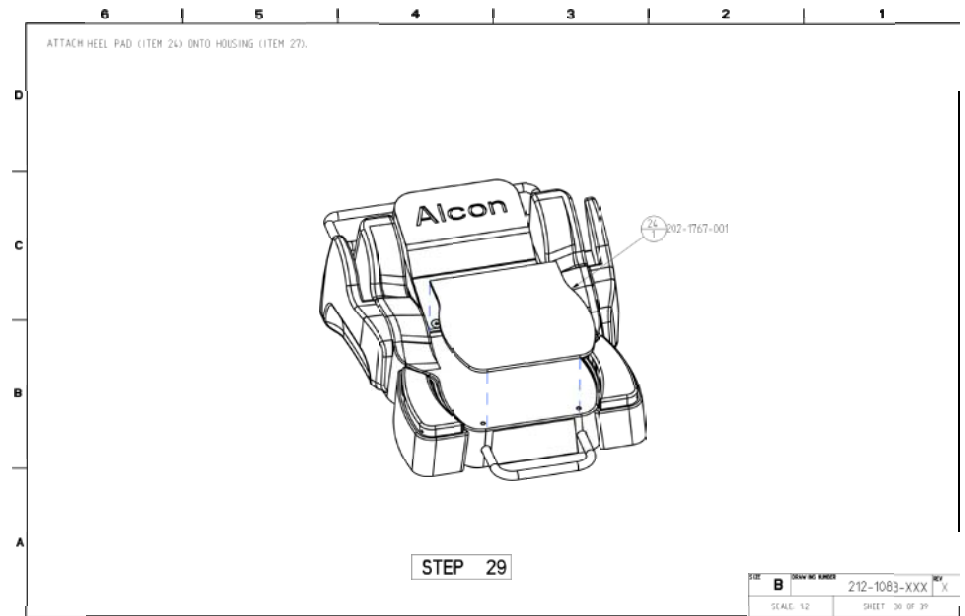
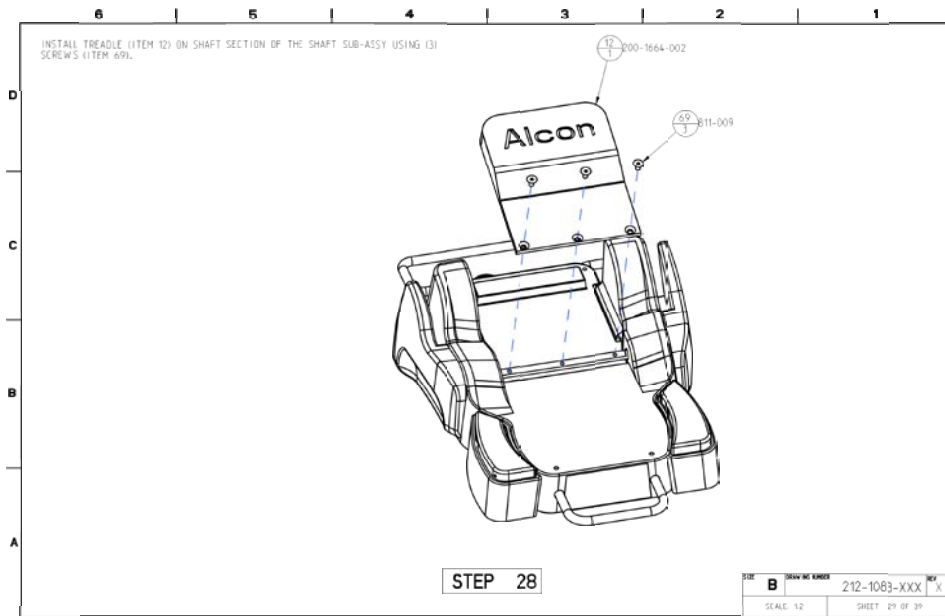


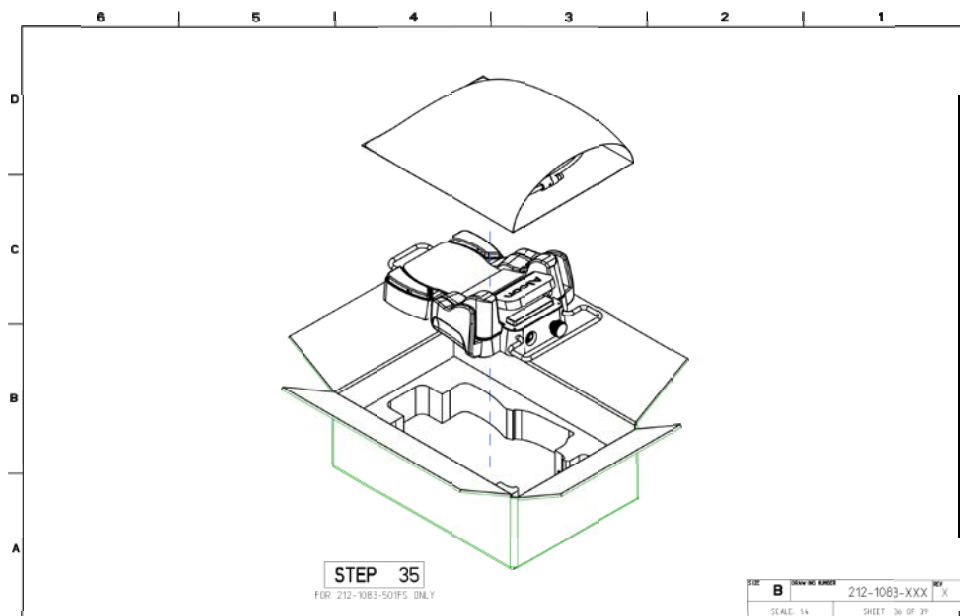
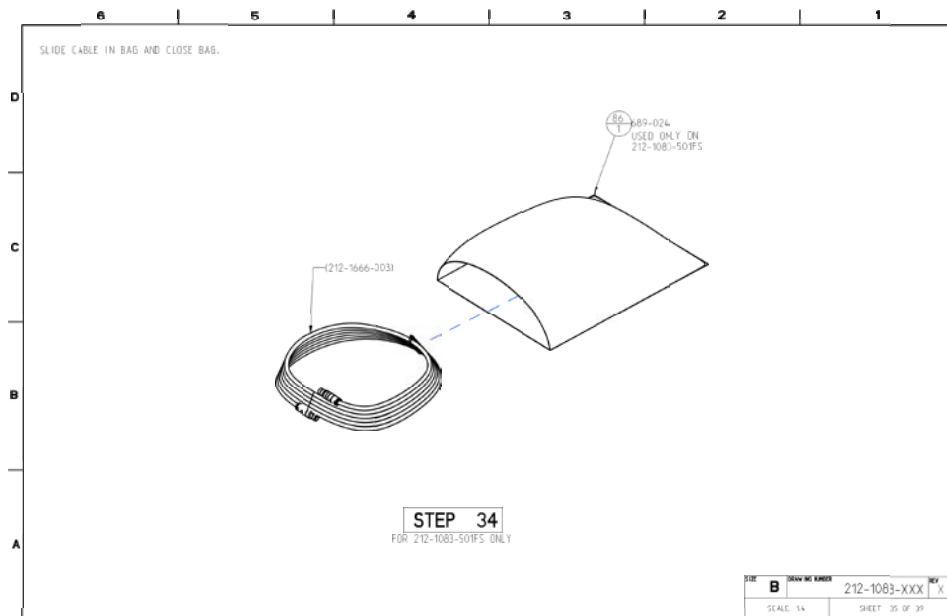
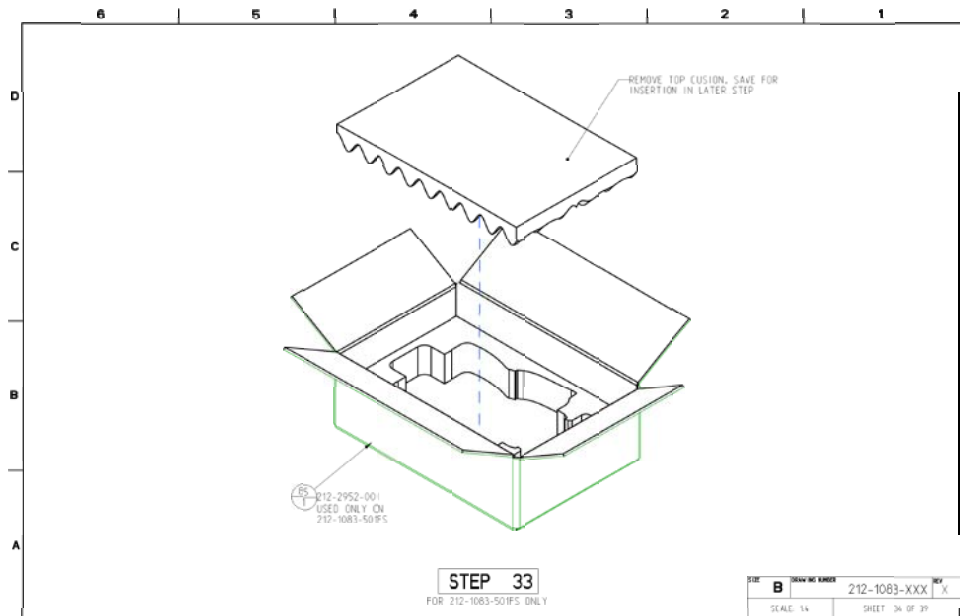
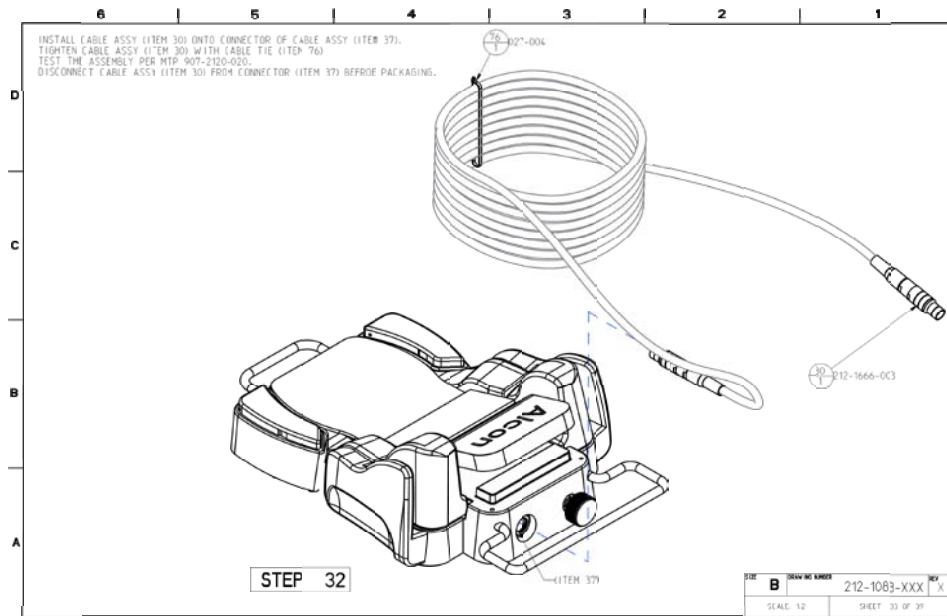


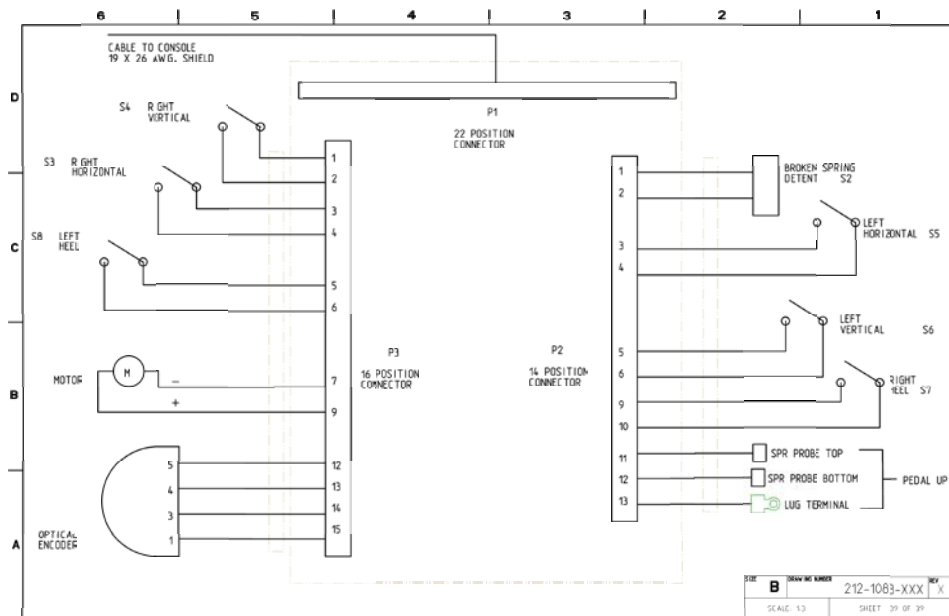
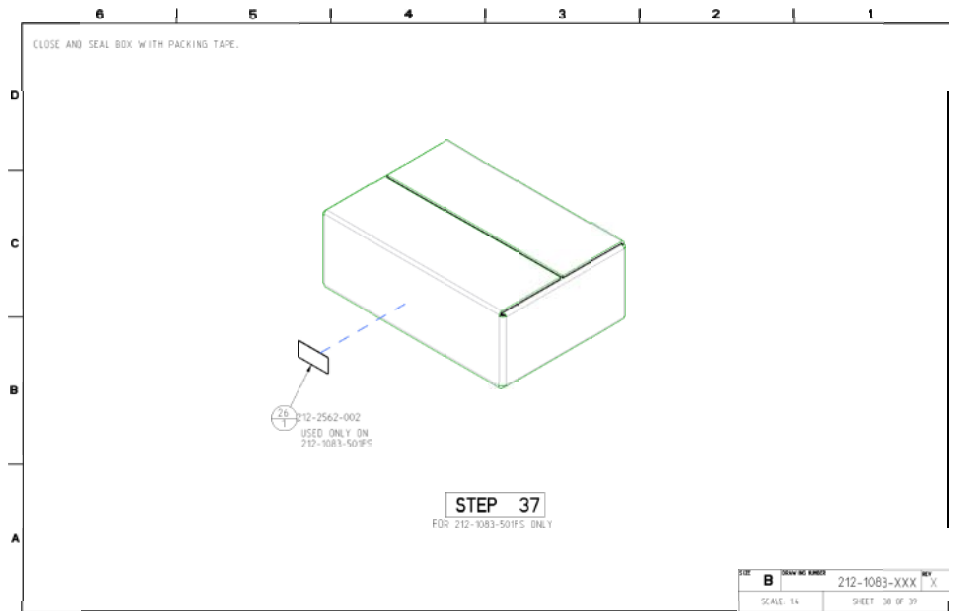
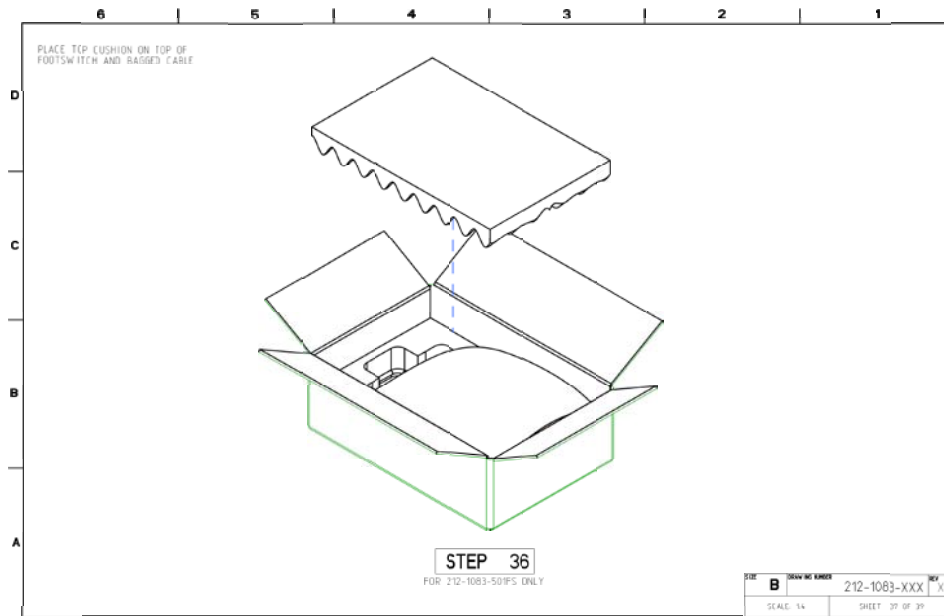












212-3386-501 ASSY, HEELSWITCH, CVS, RIGHT

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-3418-001	HOUSING,HEELSWITCH,RIGHT	1
2	212-3385-001	BARBELL,HEELSWITCH,REAR	1
3	202-1381-001	SWITCH,PUSHBUTTON, WATERPROOF	1
4	774-133	O-RING,.614X.754X.07,EPR	1
5	891-040	LUBRICANT,GREASE,SYNTHETIC	0
6	784-238	SCREW,BTN HEX,6-32X.375 PATCH	1
7	212-3383-001	COVER ASSY,HEELSWITCH,RIGHT	1
8	691-389	SPRING,CPRSN,.578ODX1.00L SST	1
9	212-3422-001	WASHER,HEELSWITCH,DELRIN	2
10	782-264	SCREW,SHLDR,SKT 4-40 416 SST	2

212-3386-502 ASSY, HEELSWITCH, CVS, LEFT

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-3418-002	HOUSING,HEELSWITCH,LEFT	1
2	212-3385-001	BARBELL,HEELSWITCH,REAR	1
3	202-1381-001	SWITCH,PUSHBUTTON, WATERPROOF	1
4	774-133	O-RING,.614X.754X.07,EPR	1
5	891-040	LUBRICANT,GREASE,SYNTHETIC	0
6	784-238	SCREW,BTN HEX,6-32X.375 PATCH	1
7	212-3383-002	COVER ASSY,HEELSWITCH,LEFT	1
8	691-389	SPRING,CPRSN,.578ODX1.00L SST	1
9	212-3422-001	WASHER,HEELSWITCH,DELRIN	2
10	782-264	SCREW,SHLDR,SKT 4-40 416 SST	2

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BAG AND TAG WITH PART NUMBER AND REVISION LETTER.
4. BALLOONS SHOW ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
5. -501FS, -502FS FIELD SERVICE ASSEMBLIES REQUIRE ADDITIONAL GASKET AND BASEPLATE INSTALLATION. (2X 212-3382-001, 2X 212-3420-001, AND REQUIRED SCREWS SX 809-007).

3D VIEW
212-3386-501

3D VIEW
212-3386-502

SEE SEPARATE BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
1	M. DINH	DATE 04/21/11	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE DISCLOSED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF ALCON.	DESCRIPTION ASSY.HEELSWITCH.CVS
1	S. NEWTON	DATE 07/18/11	ALCON	ASSY.HEELSWITCH.CVS
1	J.FOSTER	DATE 04/26/11	REV. B	212-3386-XXX
1	FORM REVISION	2/23/2007	SCALE: 1:2	SHEET 1 OF 4
PDM LINK MODEL ATTRIBUTES NAME: 212-3386-501.PROC			VERSION: B.1	

STEP 1
212-3386-501

STEP 1
212-3386-502

NOTE: ALIGN GASKETS (ITEM 12) PROPERLY IN THE HEEL SWITCH HOUSING.

SCALE: 1:1 SHEET 4 OF 4

STEP 2
212-3386-501

STEP 2
212-3386-502

NOTE: ALIGN GASKETS (ITEM 12) PROPERLY IN THE HEEL SWITCH HOUSING.

SCALE: 1:1 SHEET 3 OF 4

STEP 3
212-3386-501FS

STEP 3
212-3386-502FS

NOTE: ALIGN GASKETS (ITEM 12) PROPERLY IN THE HEEL SWITCH HOUSING.

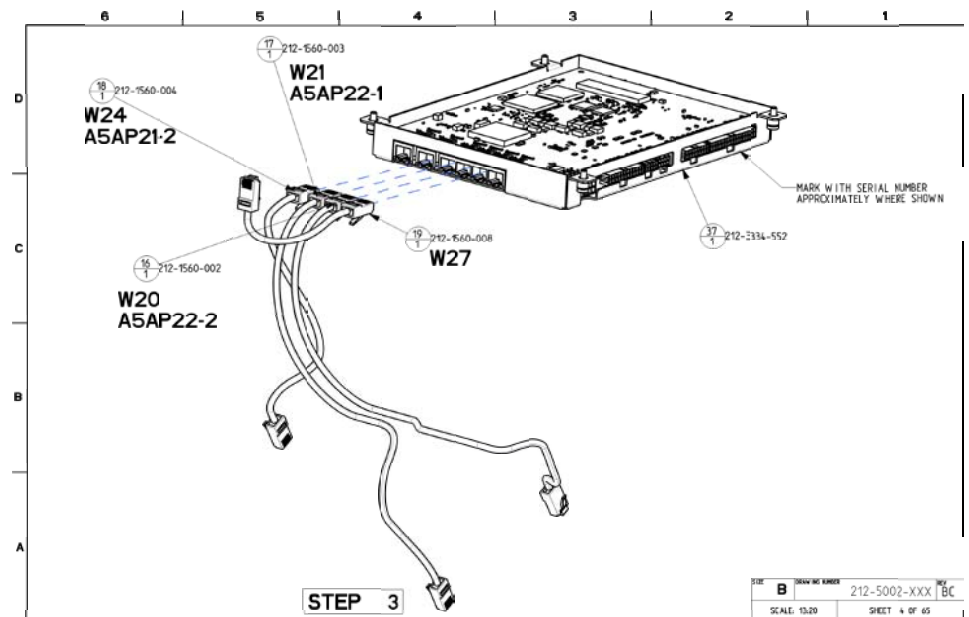
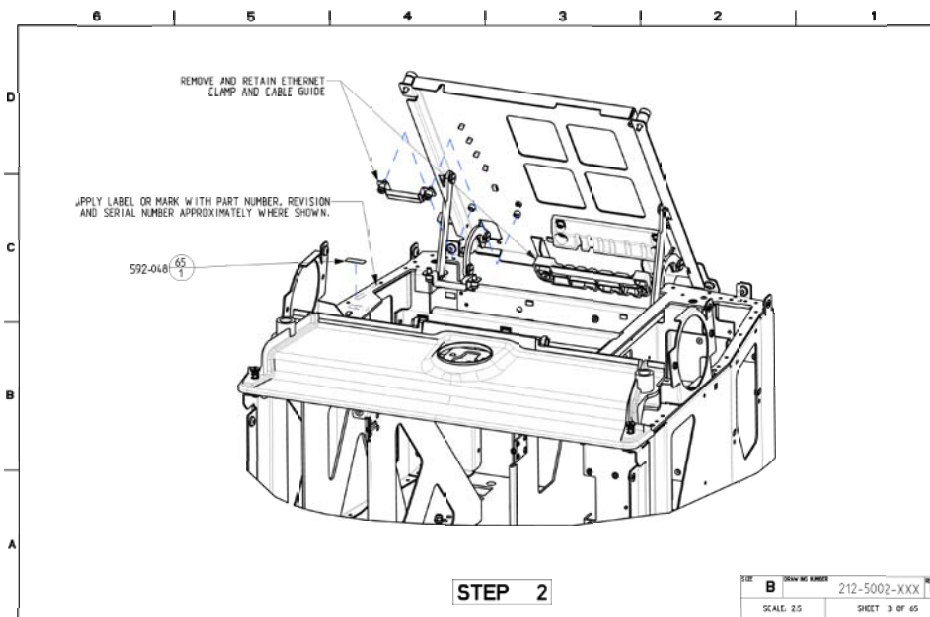
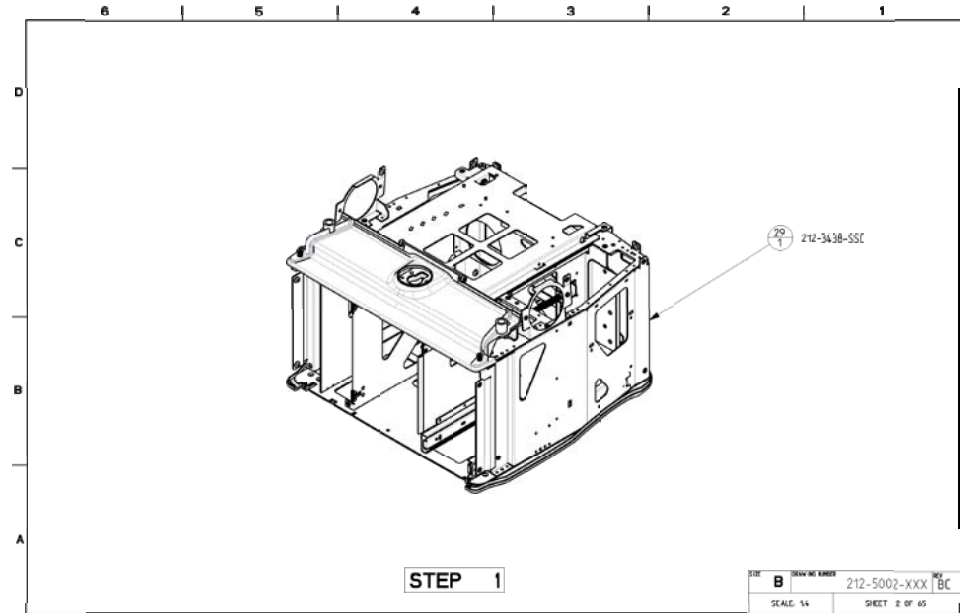
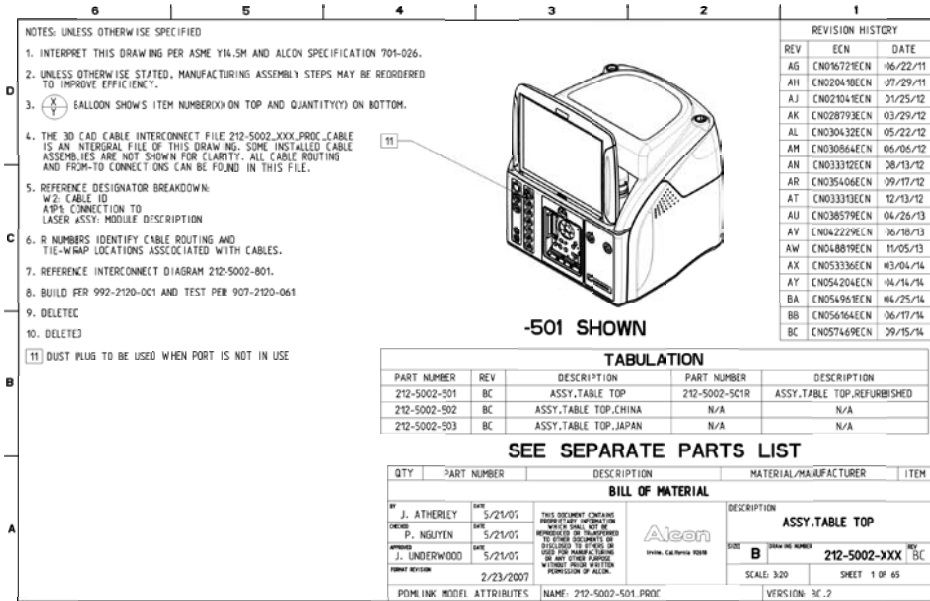
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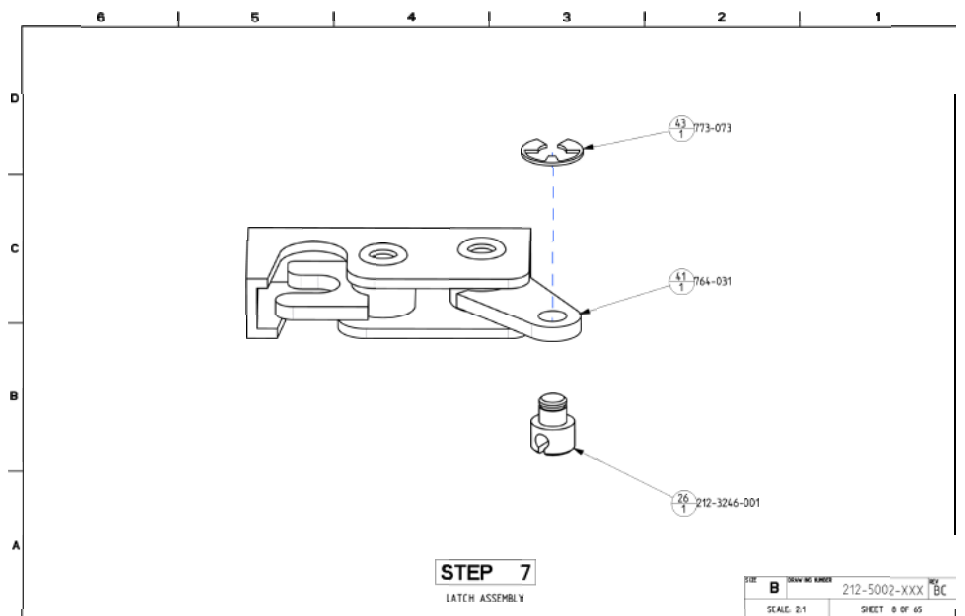
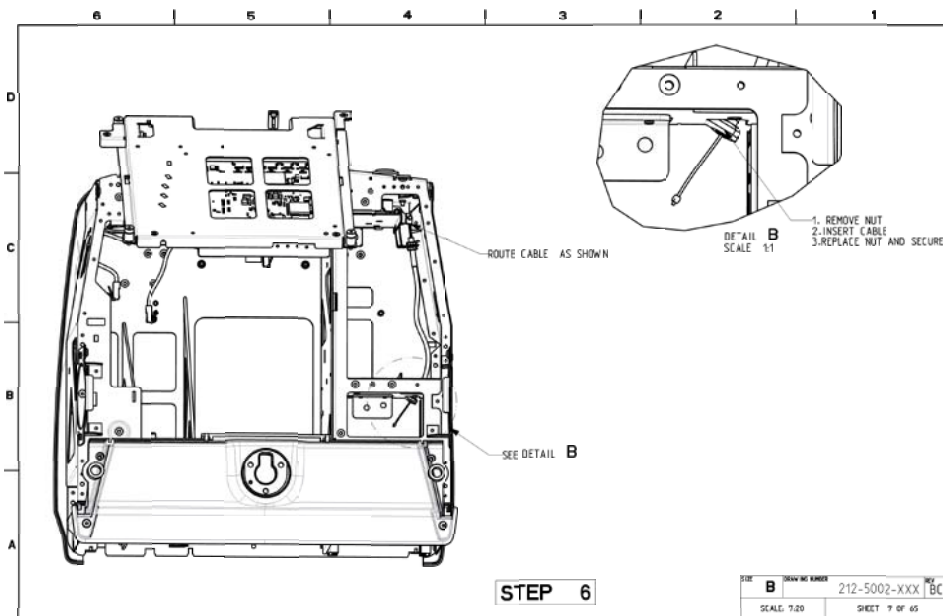
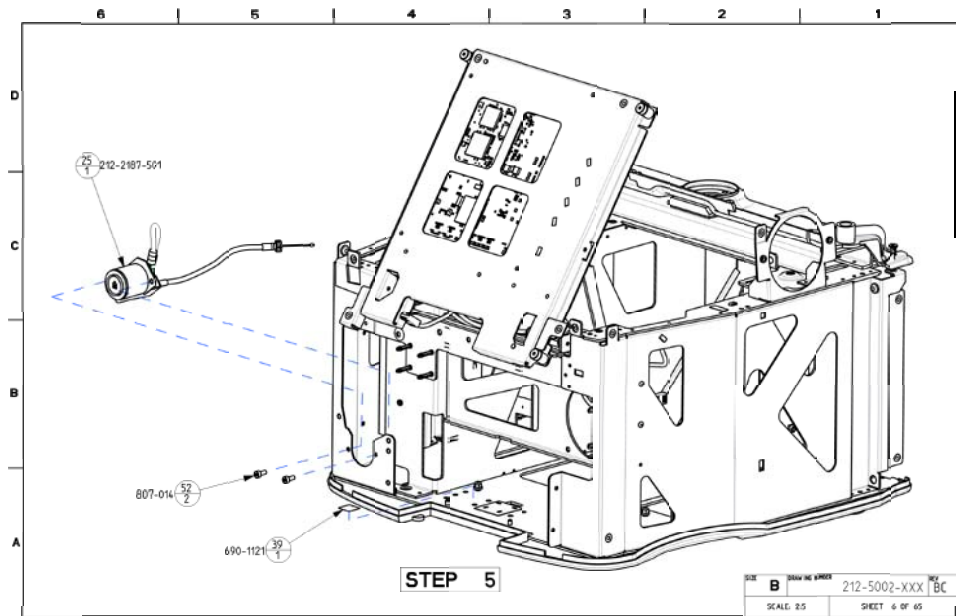
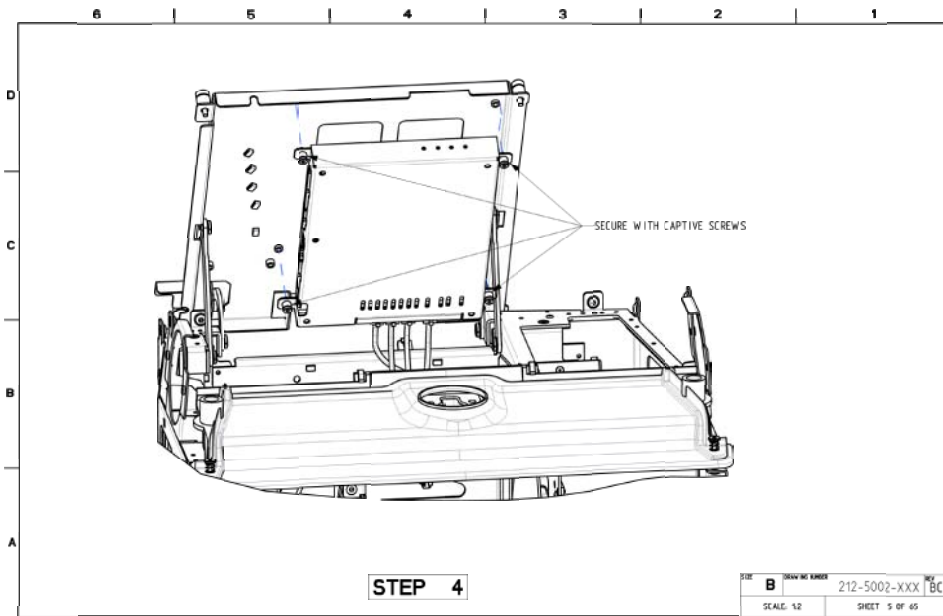
212-5002-501 ASSY, TABLE TOP

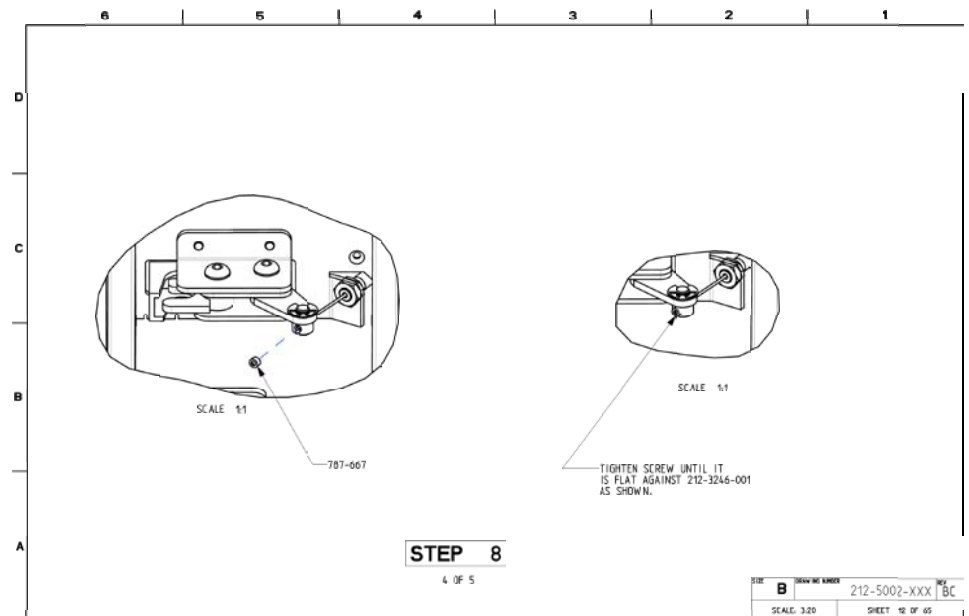
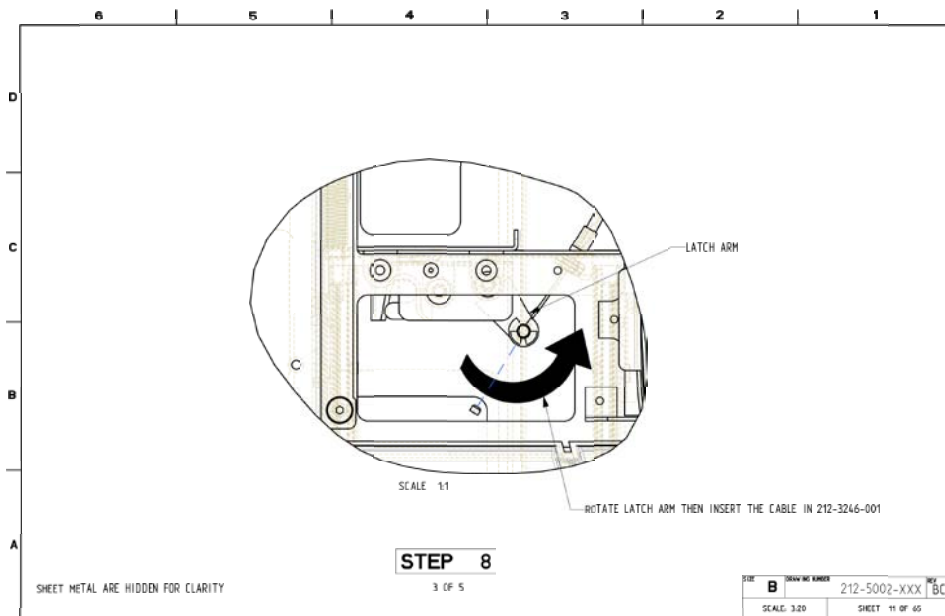
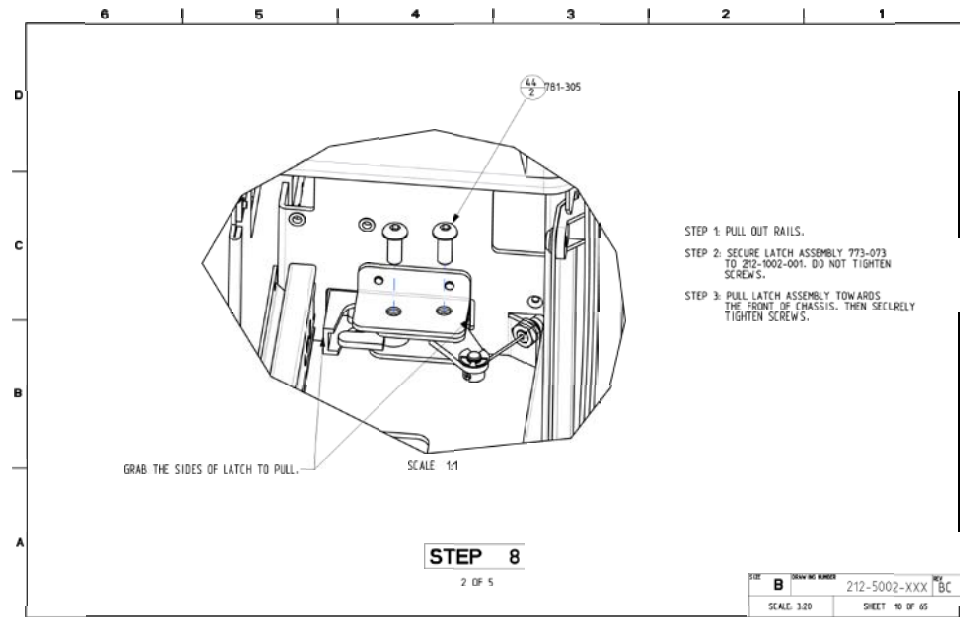
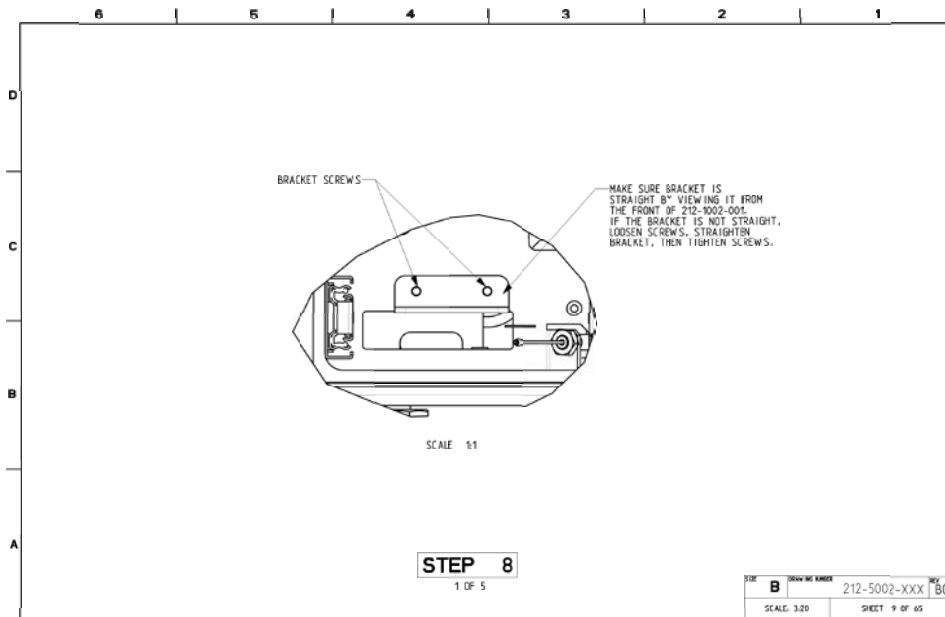
ITEM #	PART NUMBER	DESCRIPTION	QTY
001	027-003	CABLE TIE,.625X3.50L,NYLON	11
002	027-004	CABLE TIE,2.00X8.00L,NYL	6
003	027-009	CABLE TIE,3.00X11.00L,NYLON	4
004	210-1575-001	BUTTON,SWITCH,STANDBY	1
005	210-1626-551	ASSY,PCB,STAND-BY SWITCH	1
006	212-3206-502	ASSY,ARM,DISPLAY	1
007	212-3408-501	ASSY,MODULE,HOST	1
008	212-1016-501	ASSY,MODULE,PWR CTRL TABLETOP	1
009	212-1023-501	ASSY,PNEUMATIC,MODULE	1
010	212-1037-501	ASSY,MODULE,U/S-DIAT AQUA	1
011	212-1040-501	ASSY,FILTER,OIL/AIR DRYER	1
012	212-1047-501	ASSY,ILLUMINATOR,TABLE TOP	1
013	212-3245-502	ASSY,FLUIDICS	1
014	212-1557-001	CABLE ASSY,SPEAKER,RIGHT W14	1
015	212-1557-002	CABLE ASSY,SPEAKER,LEFT W15	1
016	212-1560-002	CABLE ASSY,ETHERNET W20	1
017	212-1560-003	CABLE ASSY,ETHERNET W21	1
018	212-1560-004	CABLE ASSY,ETHERNET W24	1
019	212-1560-008	CABLE ASSY,ETHERNET W27	1
020	212-1561-002	CABLE ASSY,24V,DC W83	1
021	212-1569-001	CABLE ASSY,SLOT ID,W26	1
022	212-1586-001	CABLE ASSY,W43,FAN	1
023	212-3620-001	DUCT,TABLETOP,LOWER RIGHT	1
024	212-2062-001	CABLE ASSY,PNEU DIST,W47	1
025	212-2187-501	ASSY,ACTUATOR,LATCH ILLUM	1
026	212-3246-001	ADAPT,CABLE,LATCH ILLUM	1
027	212-2360-551	ASSY,PCB,FLOAT CONN TT ILLUM	1
028	212-2421-001	BELLOWS,SOCK,ELASTOMERIC	2
029	212-3438-SSC	KIT,SSC,SKINS SHT METAL IT JAP	1
030	212-2499-001	CABLE ASSY,I/O CONTROL,W81	1
031	212-2564-501	ASSY,PANEL,REAR TABLETOP	1
032	212-2714-501	ASSY,BRACKET,CONNECTOR POWER	1
033	212-3041-501	ASSY,DUCT,REAR ILLUMINATOR	1
034	212-2780-SSC	KIT,SSC,HARN ASSY TOP CONSOLE	1
035	212-2824-001	BOLT,FL HD,SHOULDER,M4X16	4
036	212-2875-501	ASSY,FAN,TT ILLUM	1
037	212-3334-552	ASSY,PCB,SUPERVISOR MODULE	1

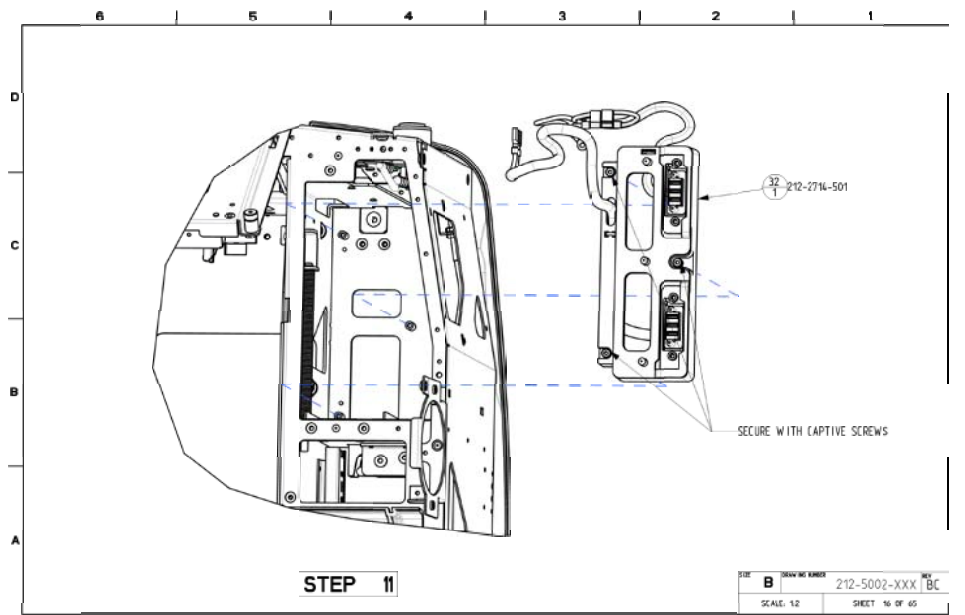
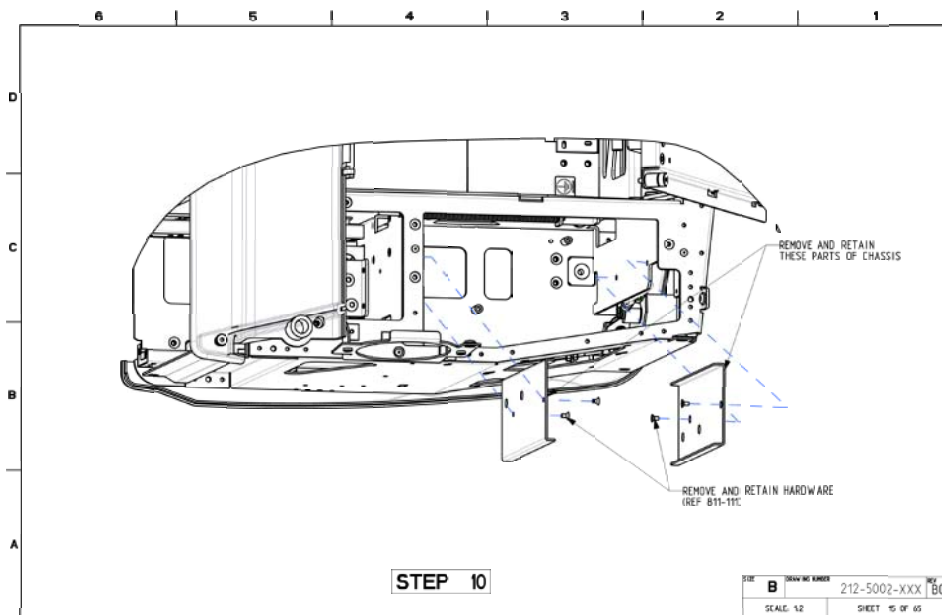
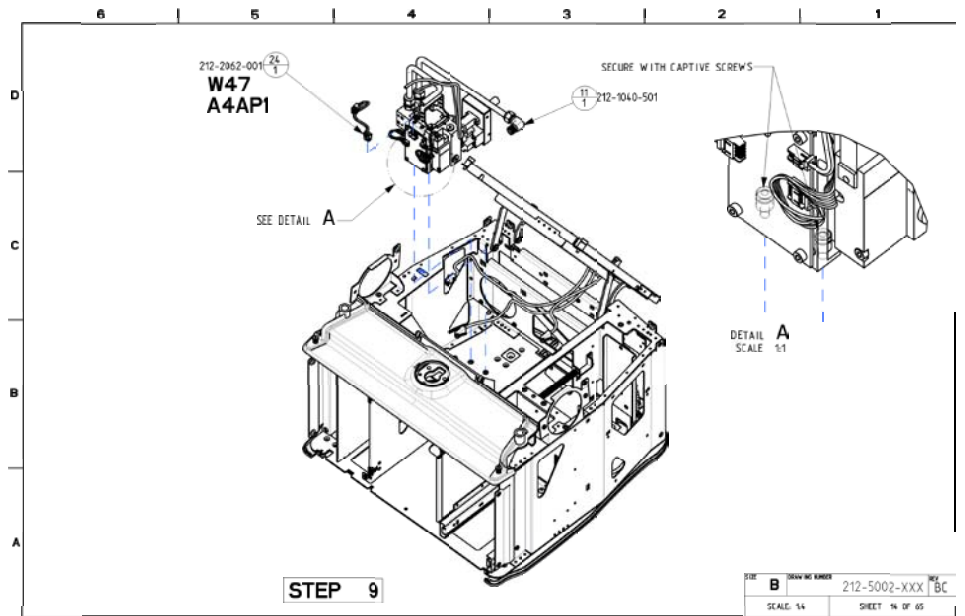
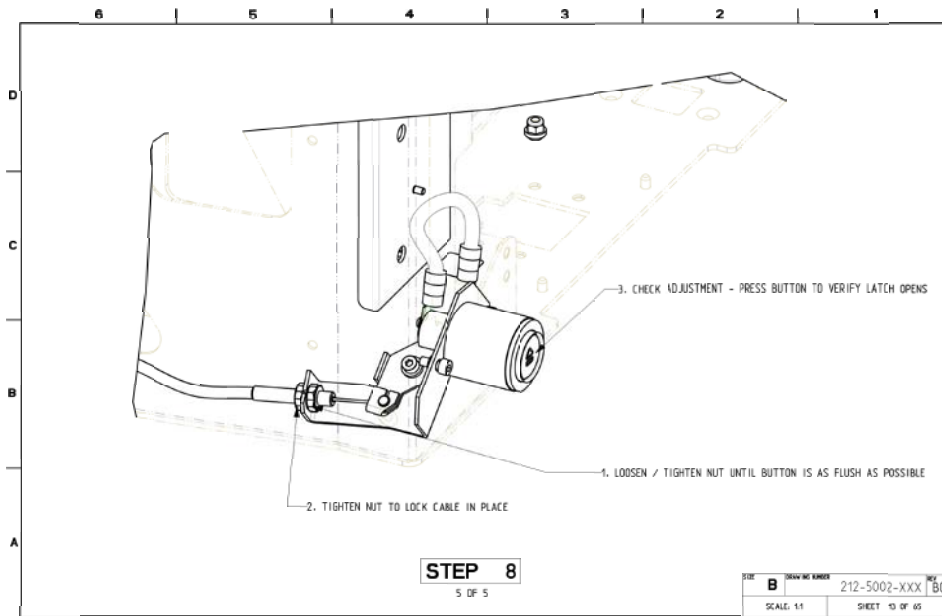
ITEM #	PART NUMBER	DESCRIPTION	QTY
038	212-2983-001	LABEL,INFO,TABLE TOP	1
039	690-1121	LABEL,GROUND	1
040	691-348	SPRING,COMP,.312ODX1.25L MW	4
041	764-031	LATCH,ROTARY,.38 DIA ZINC	1
042	773-056	RING,RETAINING,EXT .172 SHAFT	4
043	773-073	RING,RETAINING,.250X.027 EXT	1
044	781-305	SCREW,BTN HD,.25X.20X.62 CS	2
045	796-060	WASHER,FLAT,.209X.438X.010 SST	8
046	797-063	WASHER,EXT LOCK.17X.38X.02 SST	5
047	800-004	WASHER,SPLITLOCK,M4 SST	4
048	800-204	WASHER,INT LOCK,M4 SST	1
049	801-004	WASHER,FLAT,M4 SST	4
050	803-004	NUT,HEX,M4X0.7 SST	1
051	787-667	SETSCREW,SKT HD,CUP 8-32X.125	1
052	807-014	SCREW,CAP HD SKT,M4X10 SST	11
053	807-022	SCREW,CAP HD SKT,M4X45 SST	4
054	807-042	SCREW,CAP HD SKT,M6X12 SST	3
055	809-006	SCREW,BTN HD SKT,M4X8 SST	11
056	809-007	SCREW,BTN HD SKT,M4X10 SST	2
057	809-008	SCREW,BTN HD SKT,M4X12 SST	2
058	809-103	SCREW,BTN HD SKT,M4X6 SST	4
059	811-002	SCREW,FLAT HD SKT,M3X8 SST	2
065	592-048	LABEL,WINDOWS,XP EMBEDDED	1
068	212-1054-001	PANEL,TABLETOP,LEFT	1
069	212-1055-001	PANEL,TABLETOP,RIGHT	1
070	212-2041-501	ASSY,PANEL,FRONT TABLE TOP	1
071	212-2042-504	ASSY,PANEL,LOWER REAR TT ALJ IEC	1
072	212-2040-501	ASSY,CAP,TABLE TOP	1
073	212-1895-002	TABLETOP,SURFACE,WORK	1
074	212-3266-001	FILTER ASSY,AIR,W/FRAME TT RT	1
075	050-840	CONNECTOR,COVER,PLUG	2
076	789-022	SCREW,PH PH,M2X0.40X6 SST	4
077	058-240	CAP,CONNECTOR,PLUG 9 POS	1
078	212-2369-001	COVER,USB PORT,EXPANSION	1
079	212-2897-001	COVER,POWER ENTRY,NGVS	1
080	809-003	SCREW,BTN HD SKT,M3X10 SST	1
081	801-003	WASHER,FLAT,M3 SST	1
082	026-143	CLAMP,CABLE .31X.38,BLK NYL	1

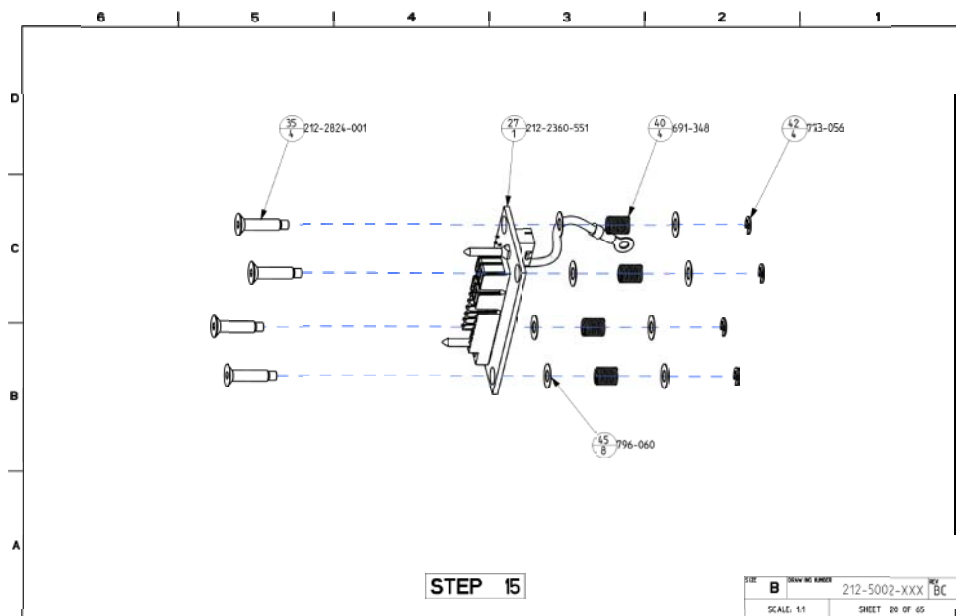
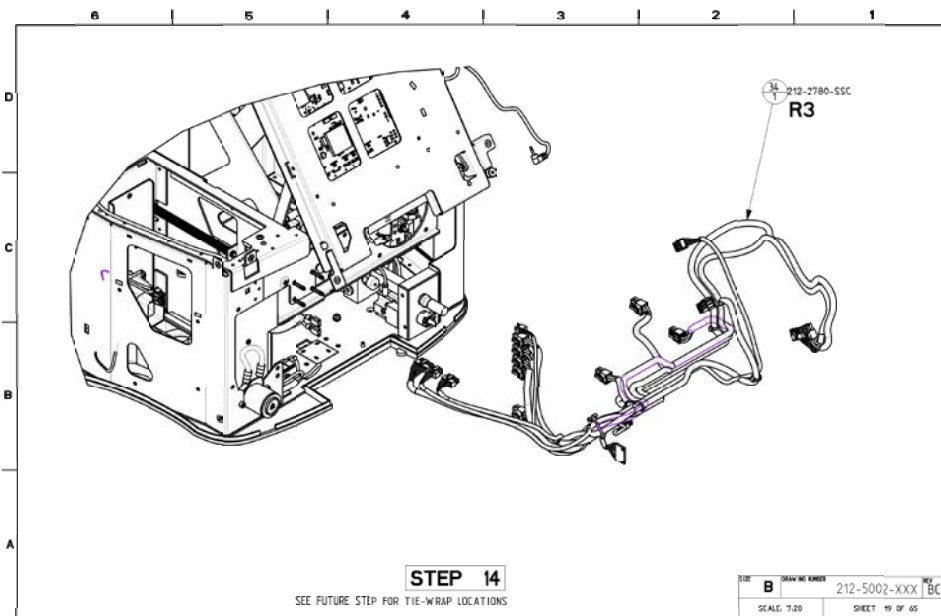
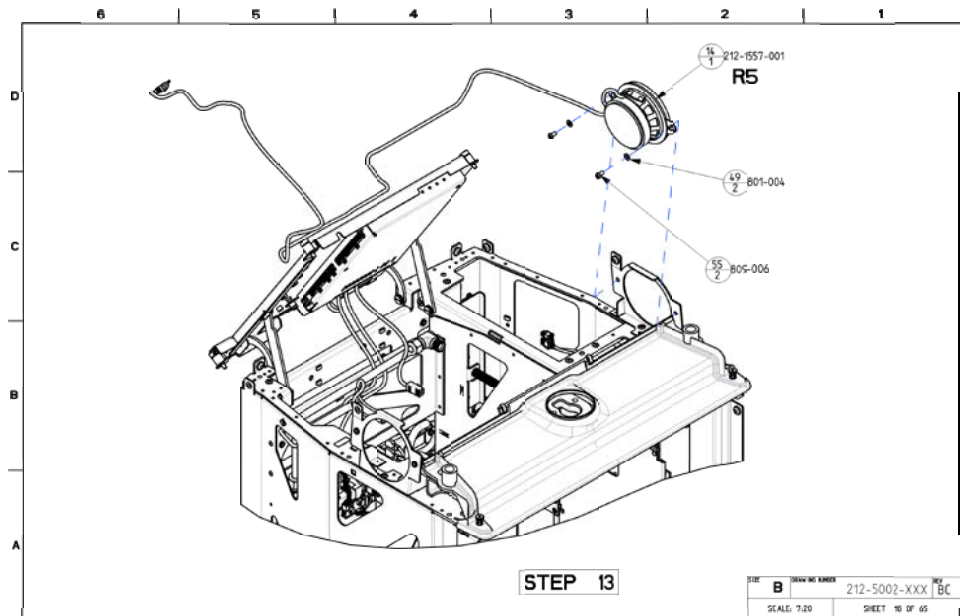
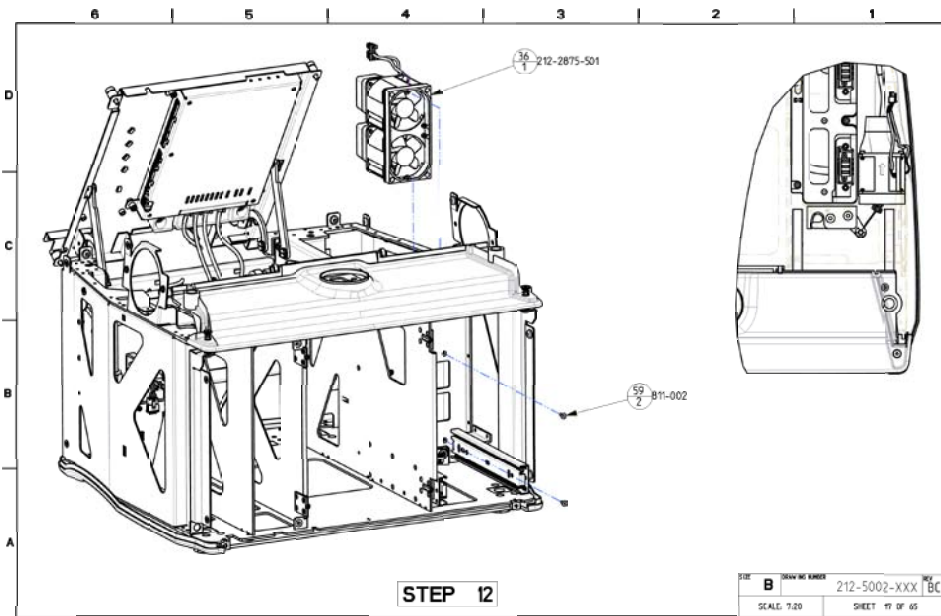
ITEM #	PART NUMBER	DESCRIPTION	QTY
083	786-311	SCREW,CAP HD SKT,4-40X.250 SST	2
084	212-2898-001	COVER,CONNECTOR,DATA NGVS	1
086	212-3365-001	COVER,USB,WI-FI	1
078	212-2369-001	COVER,USB PORT,EXPANSION	1
079	212-2897-001	COVER,POWER ENTRY,NGVS	1
080	809-003	SCREW,BTN HD SKT,M3X10 SST	1
081	801-003	WASHER,FLAT,M3 SST	1
082	026-143	CLAMP,CABLE,.31X.38 BLK NYL	1
083	786-311	SCREW,CAP HD SKT,4-40X.250 SST	2
084	212-2898-001	COVER,CONNECTOR,DATA NGVS	1
086	212-3365-001	COVER,USB,WI-FI	1

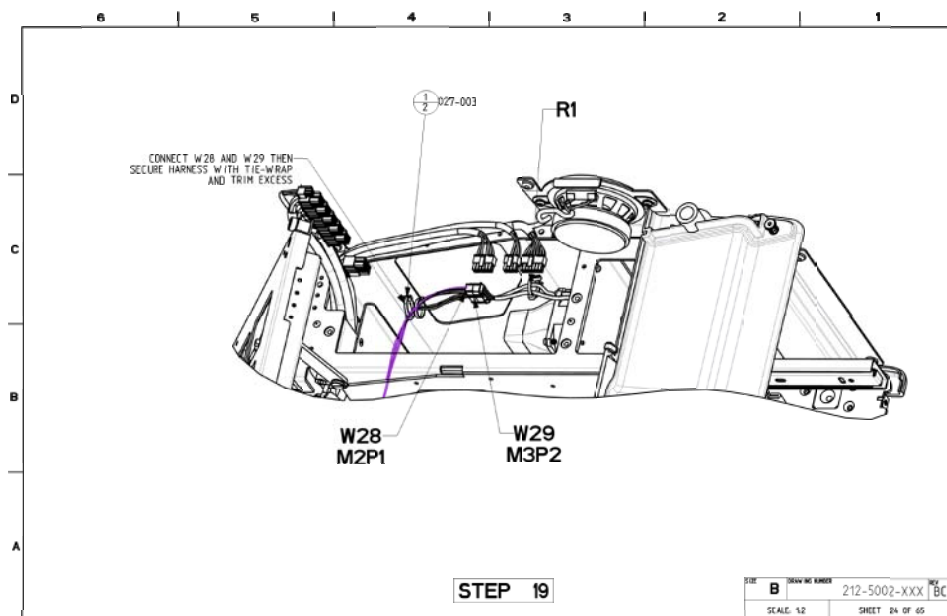
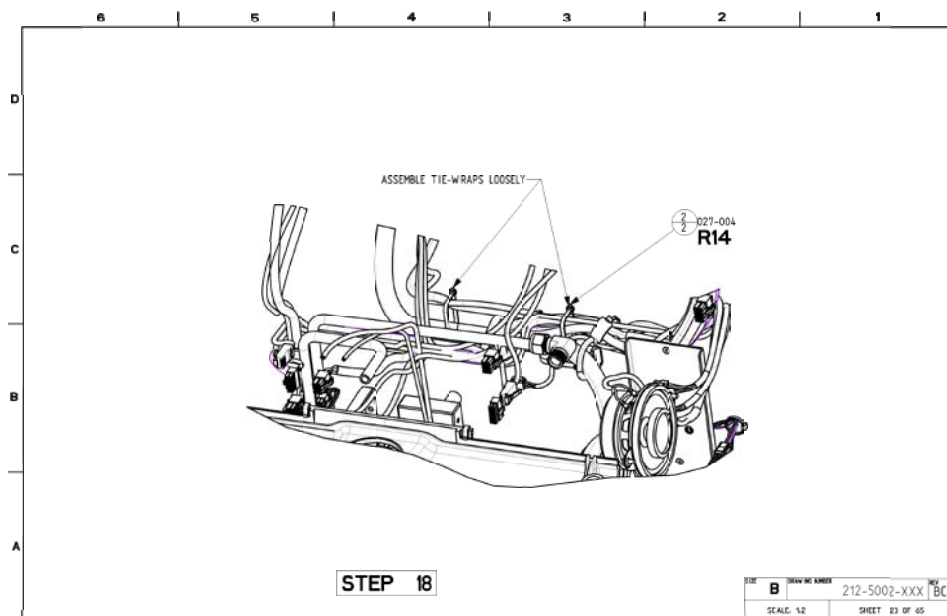
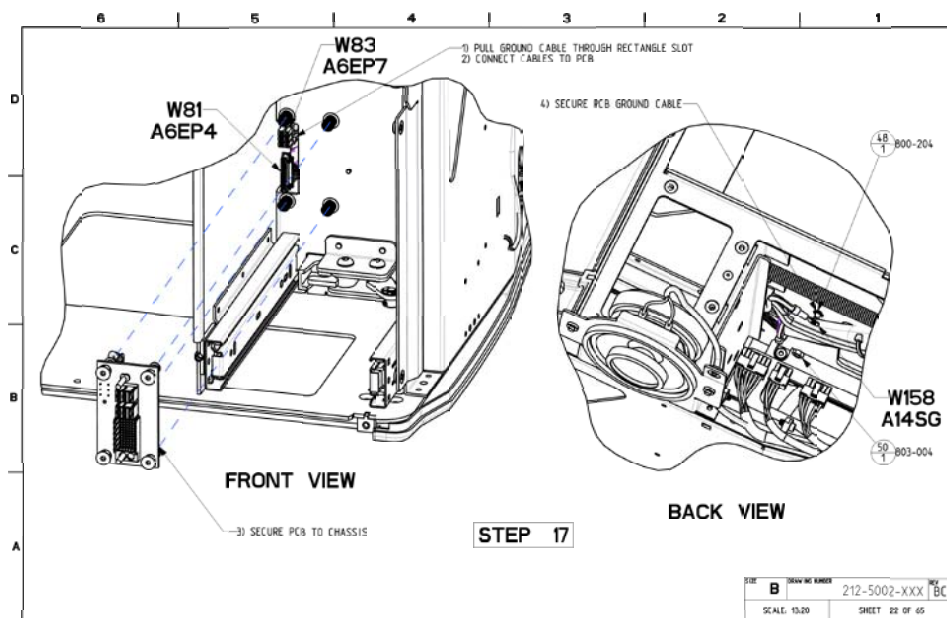
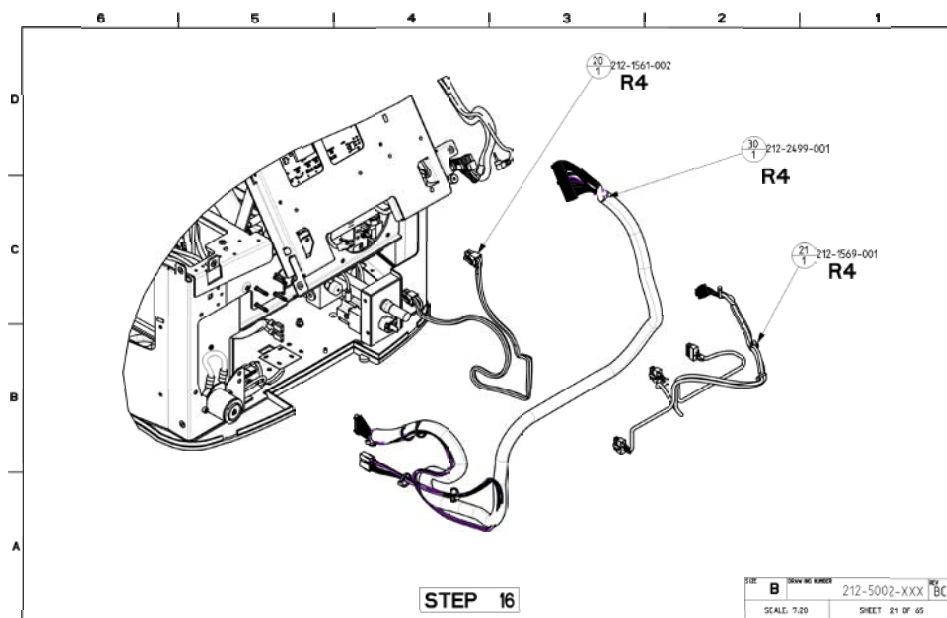


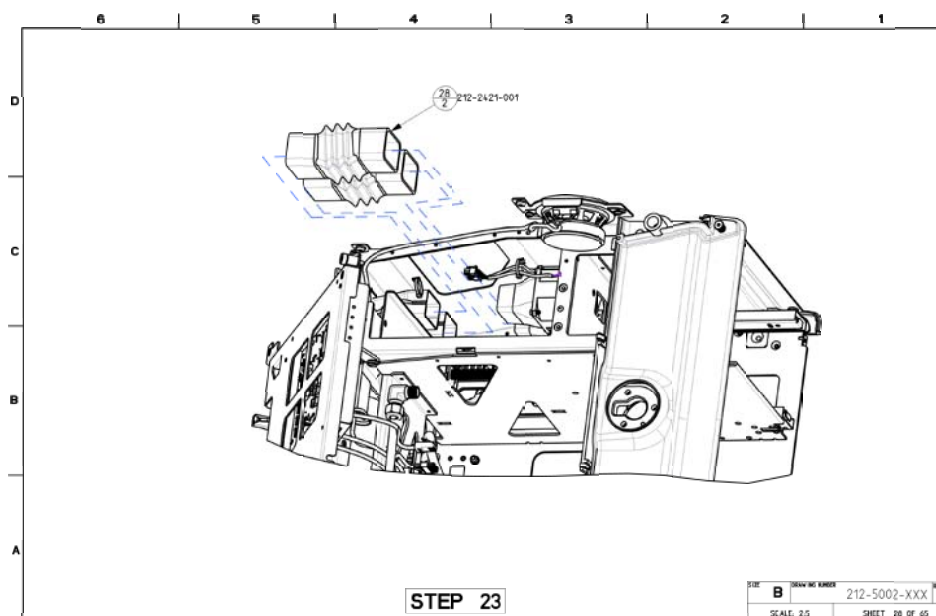
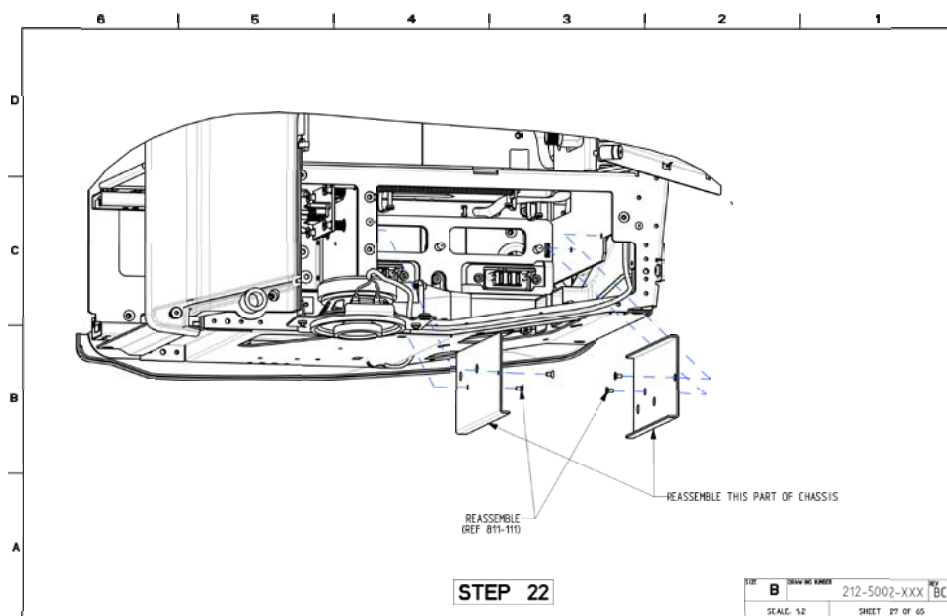
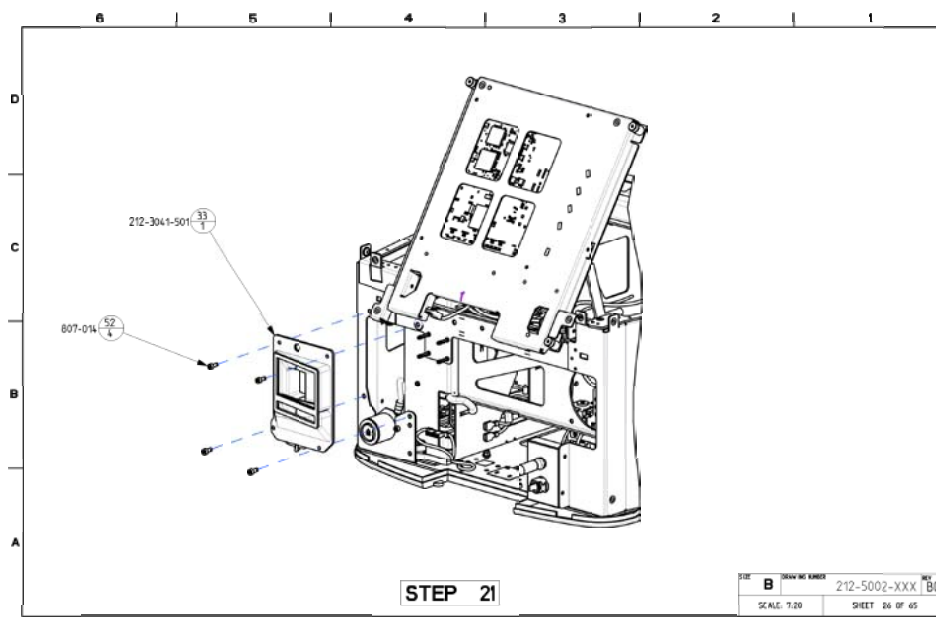
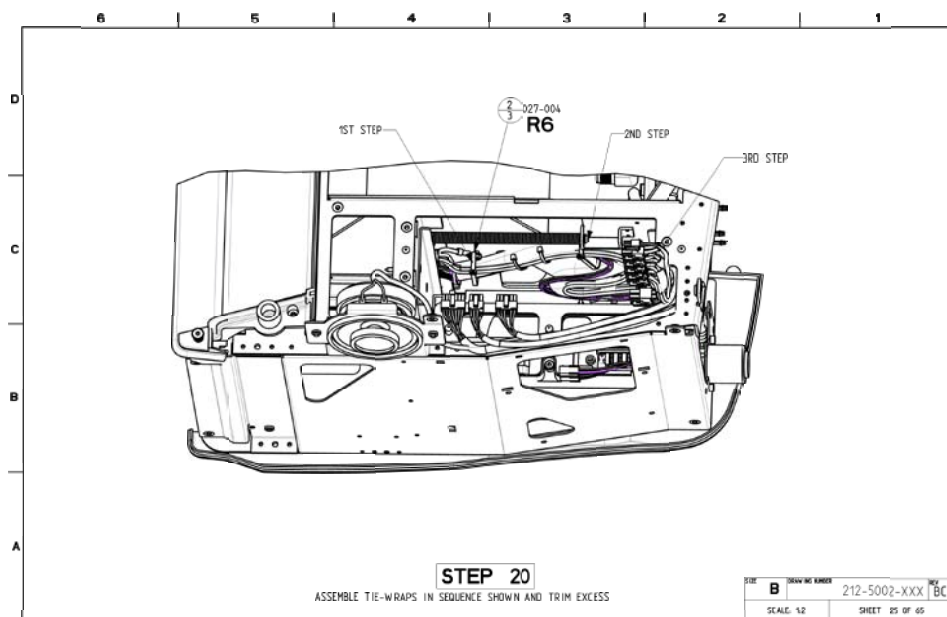


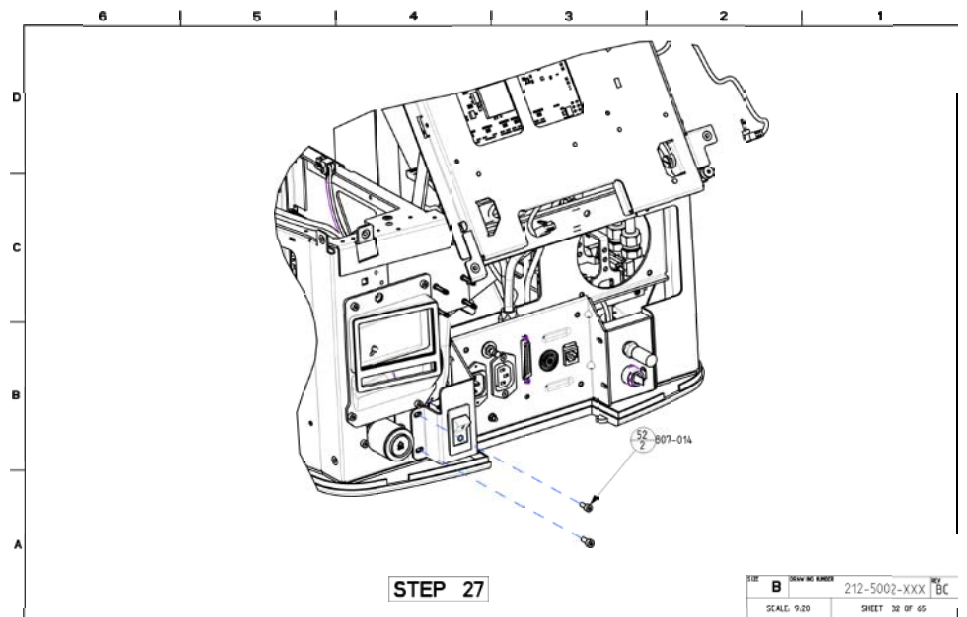
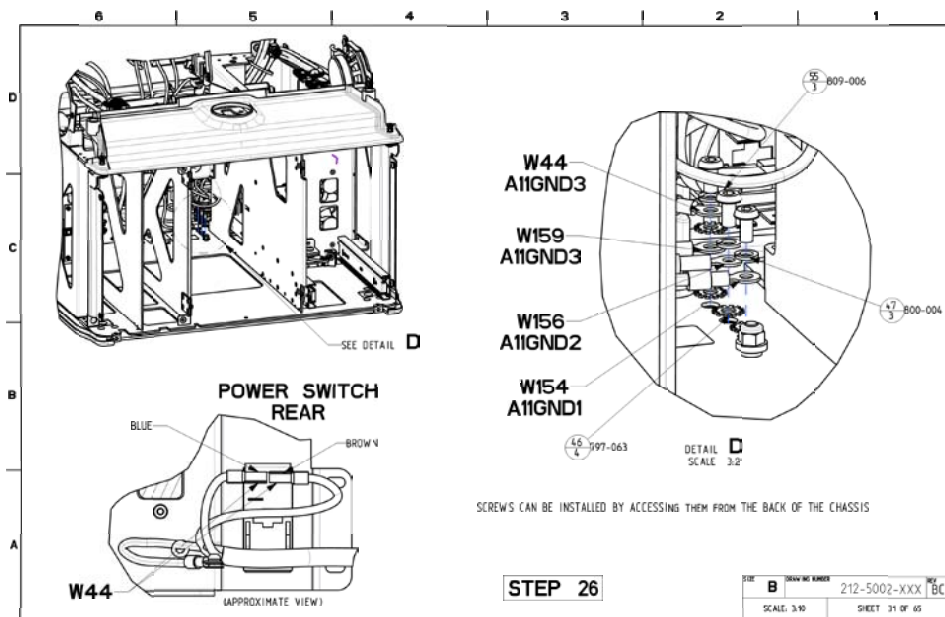
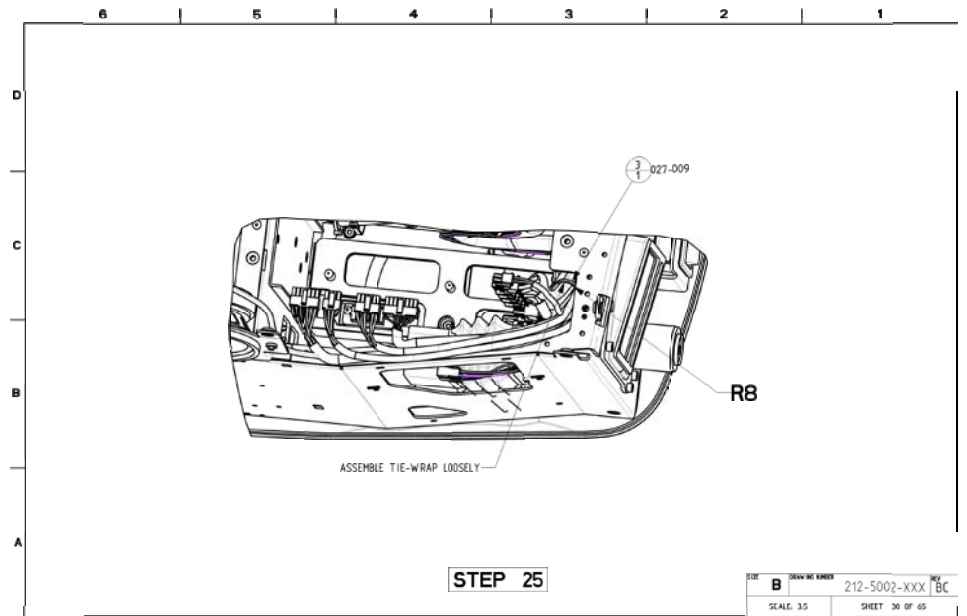
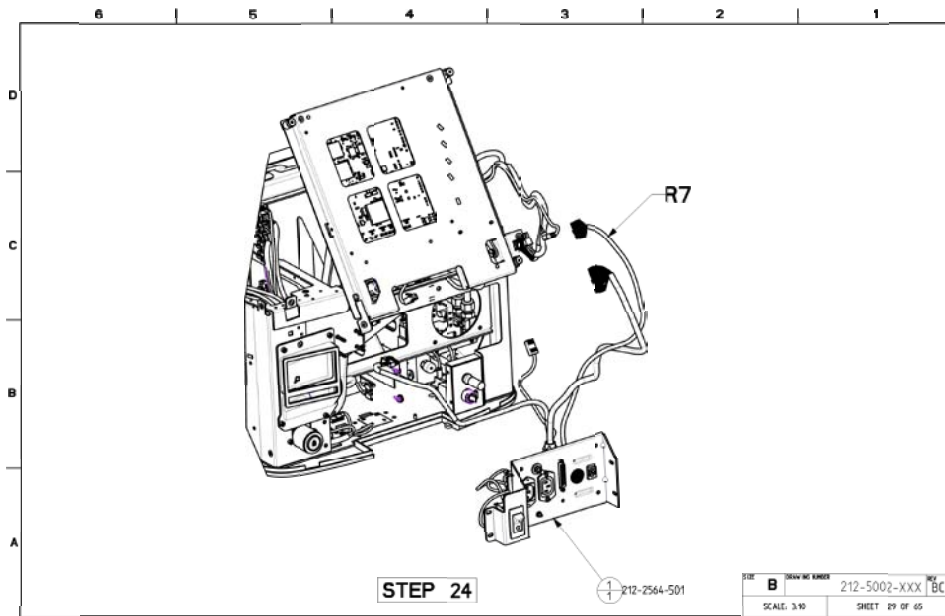


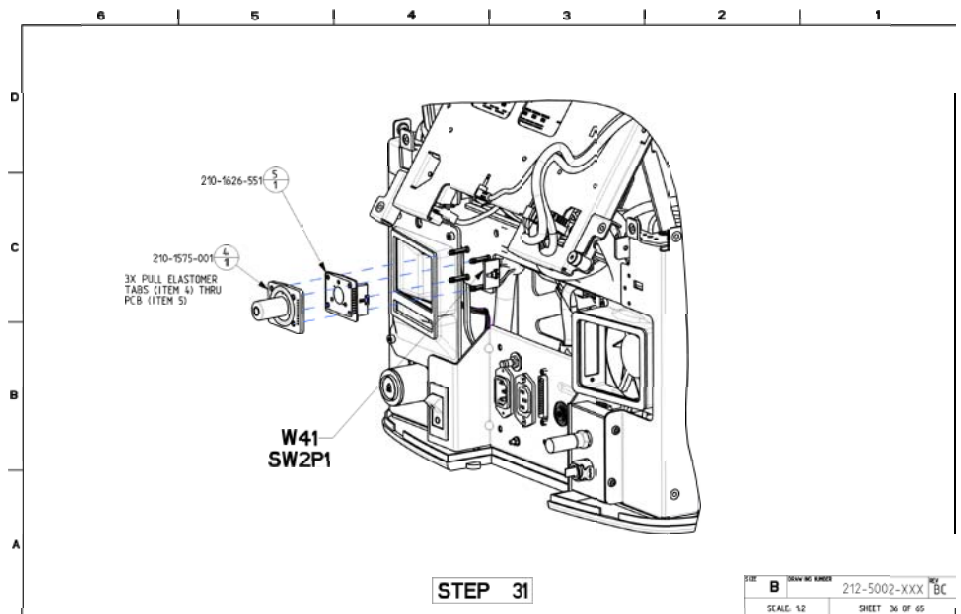
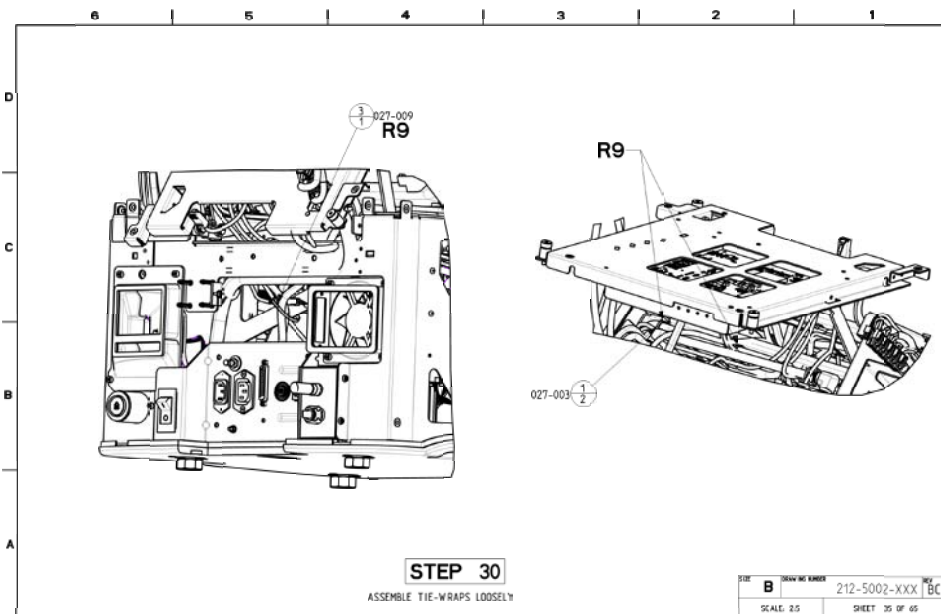
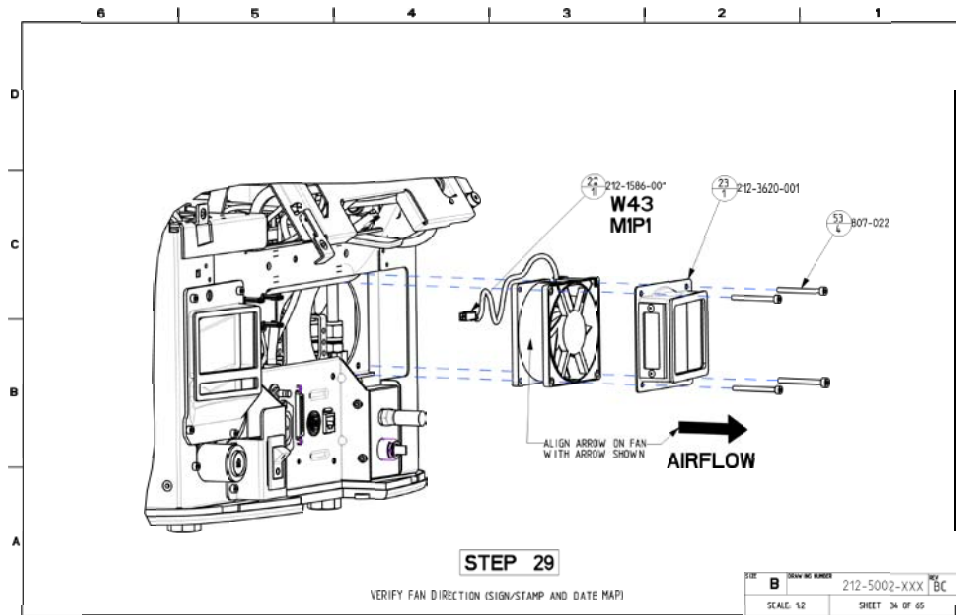
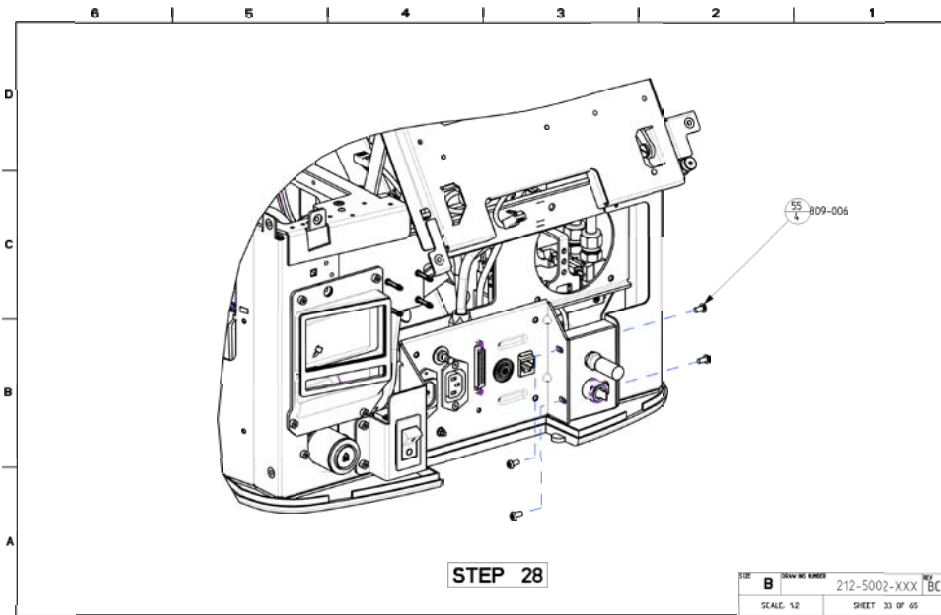


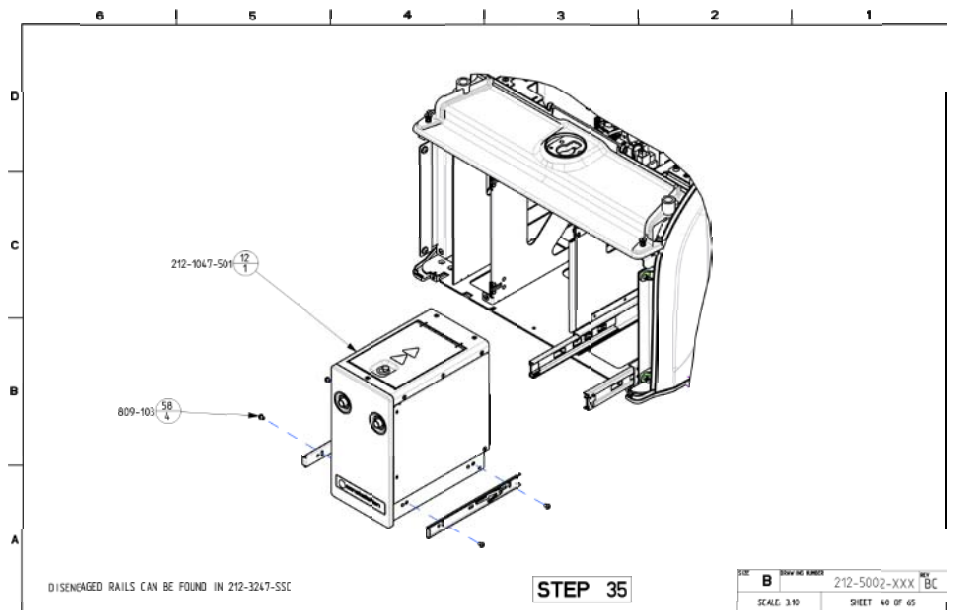
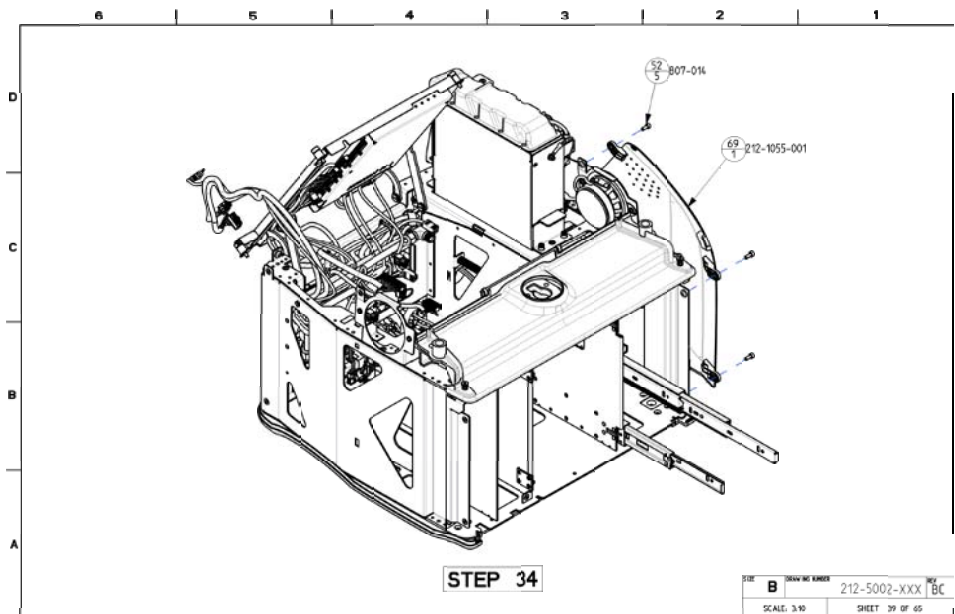
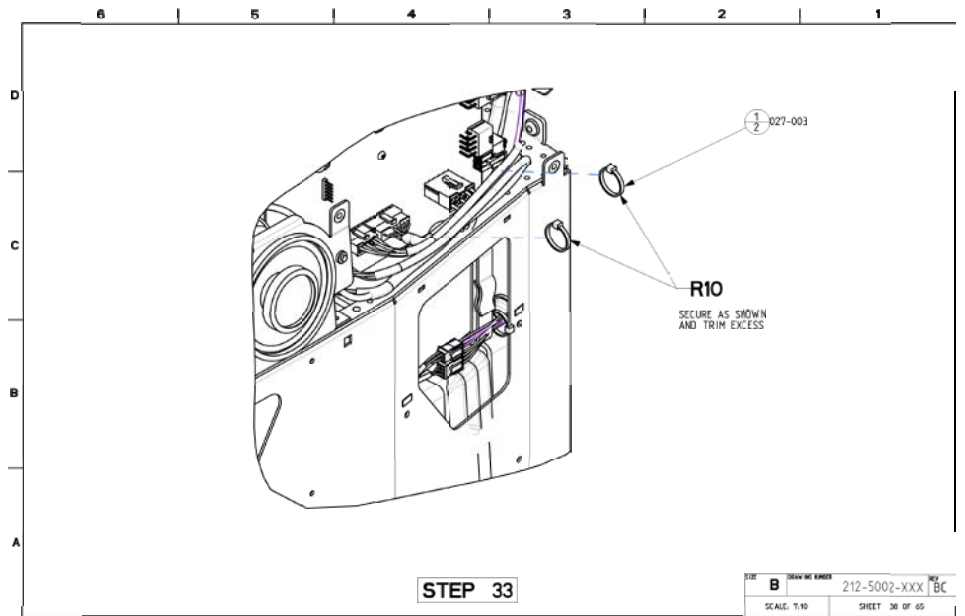
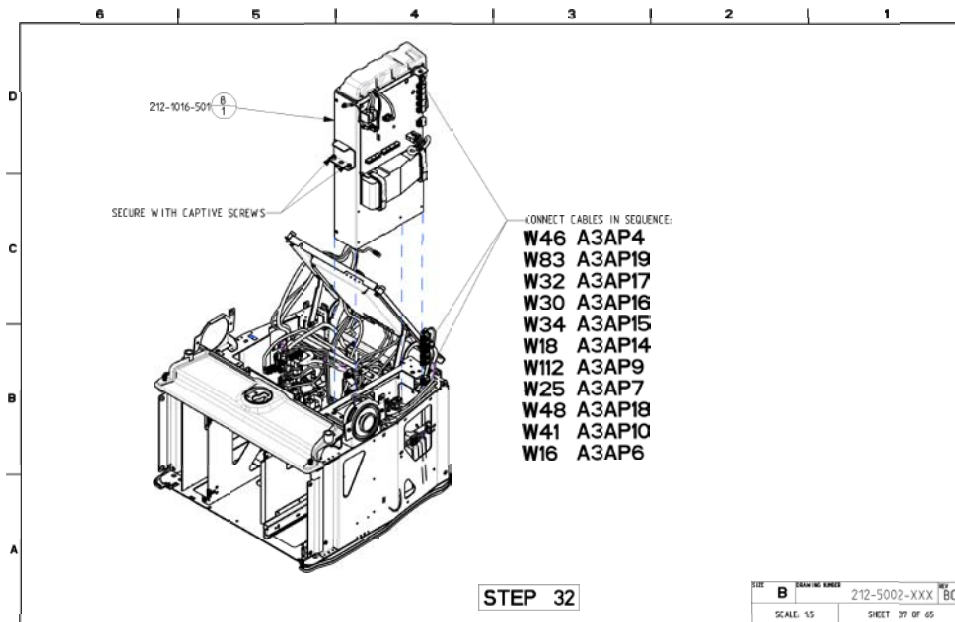


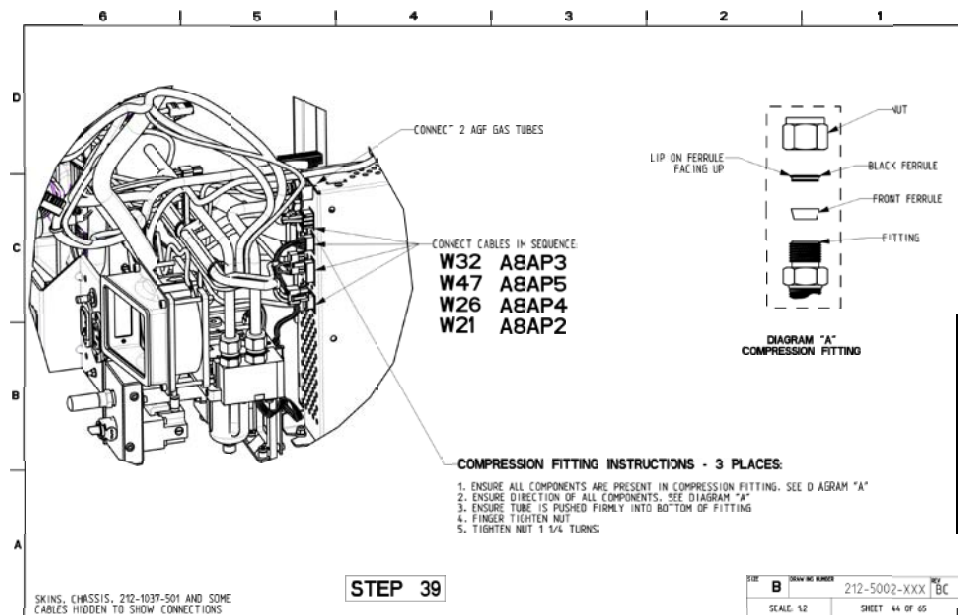
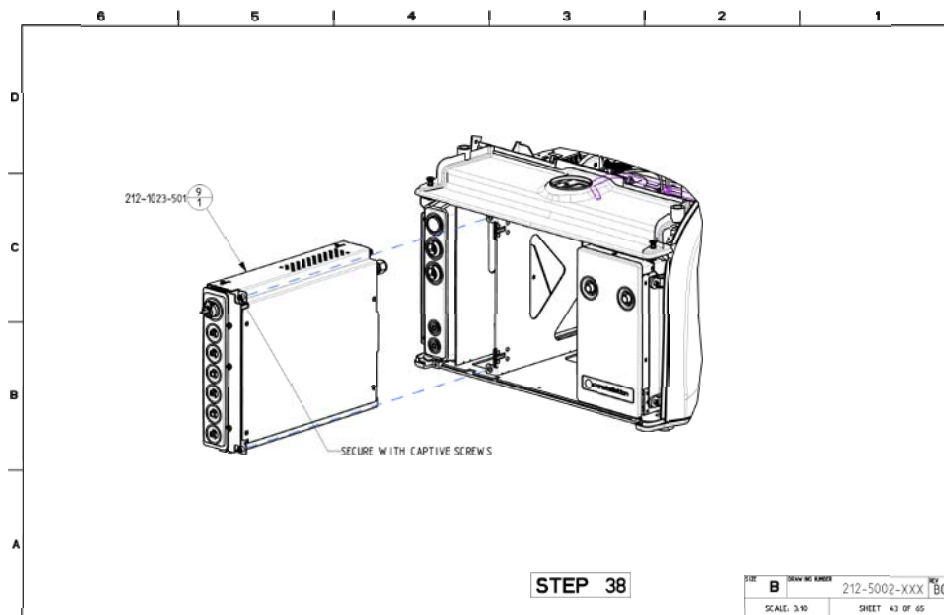
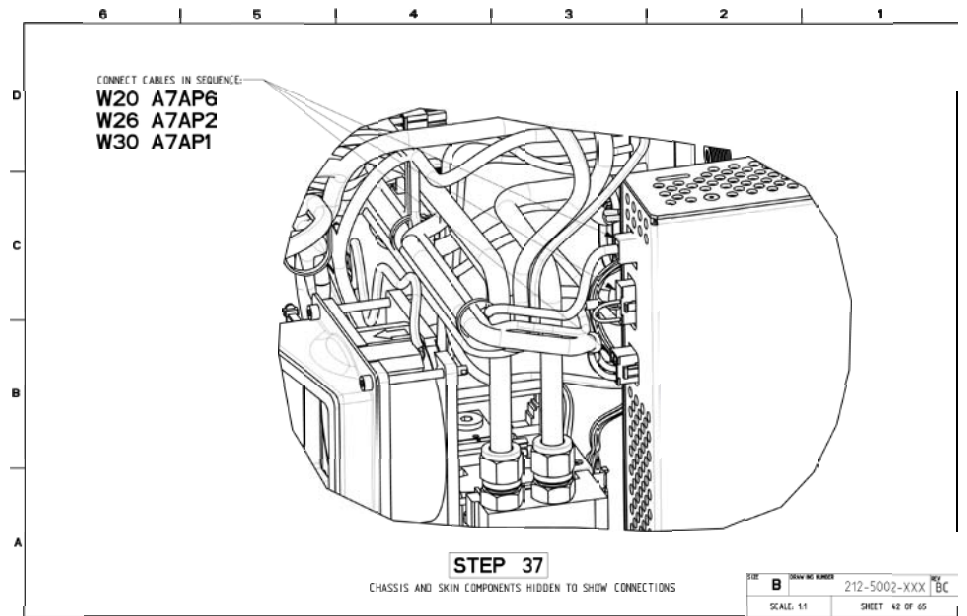
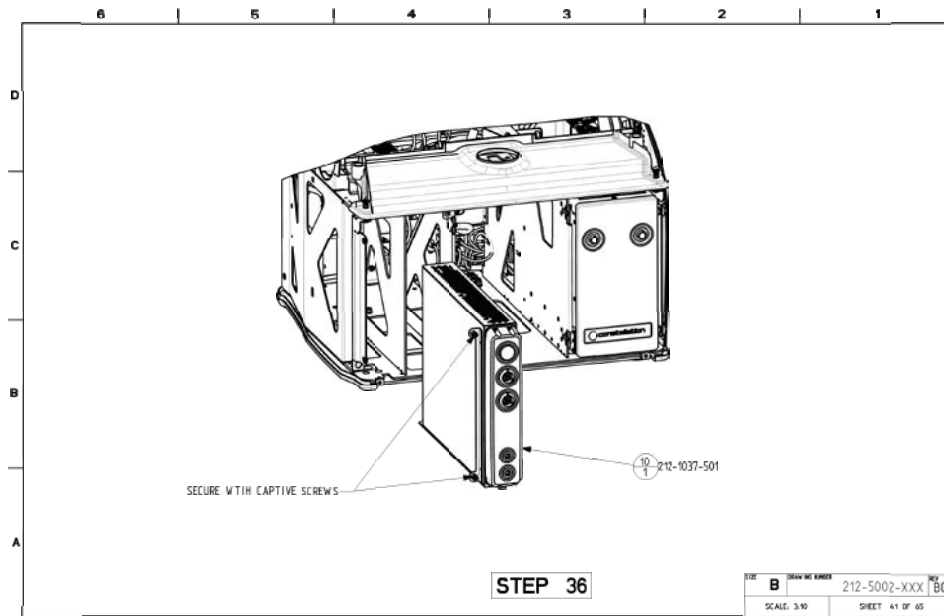


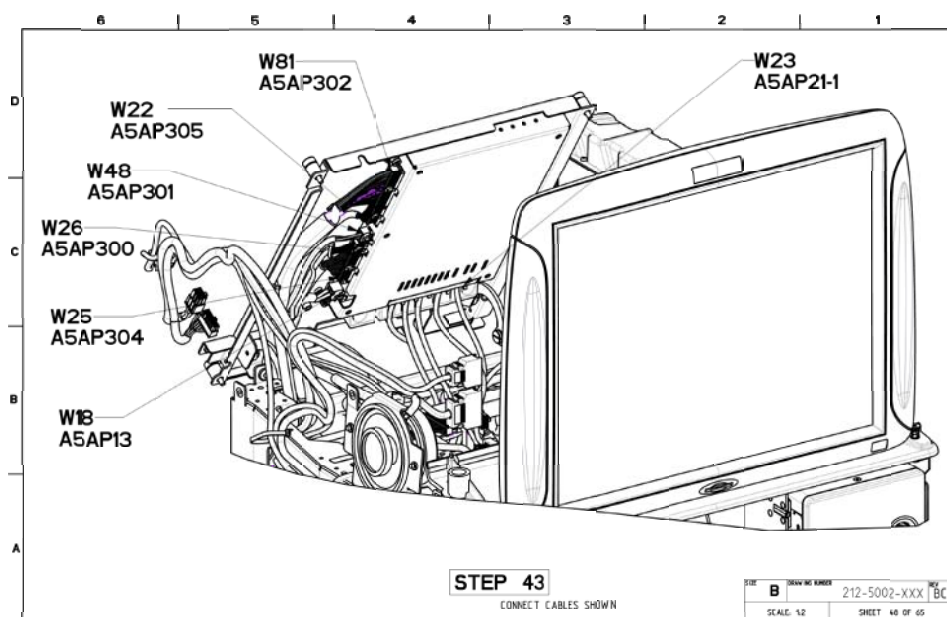
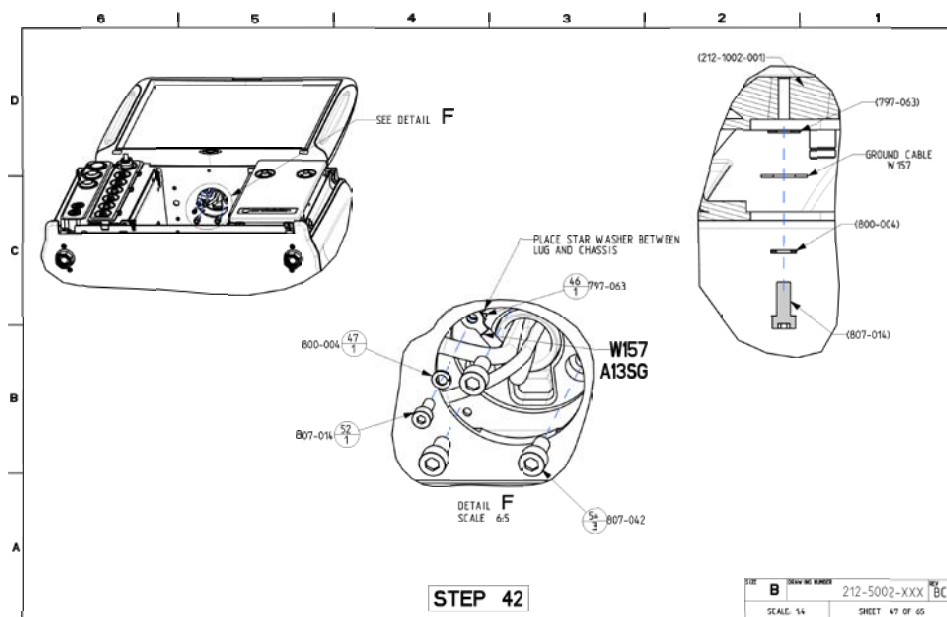
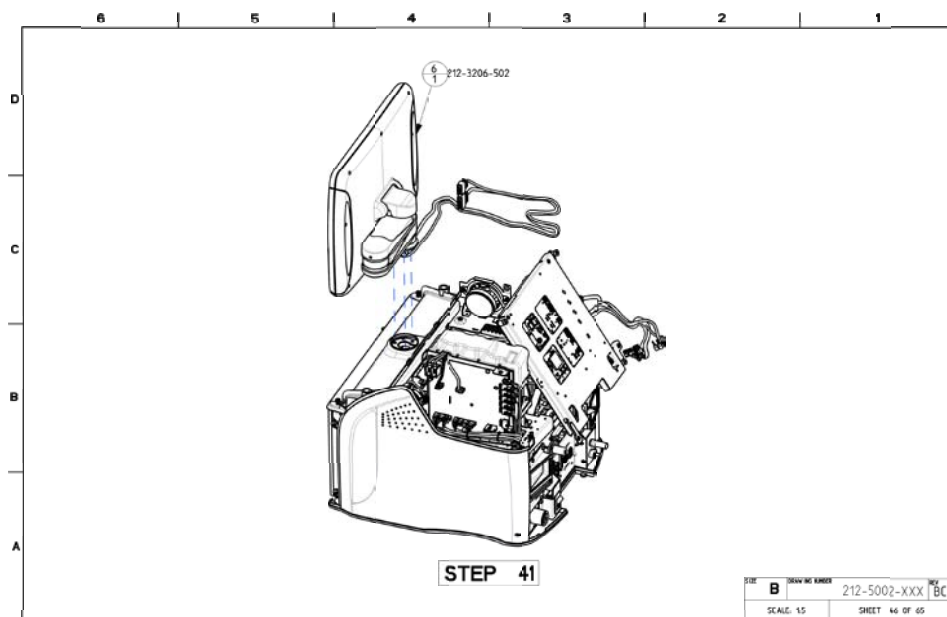
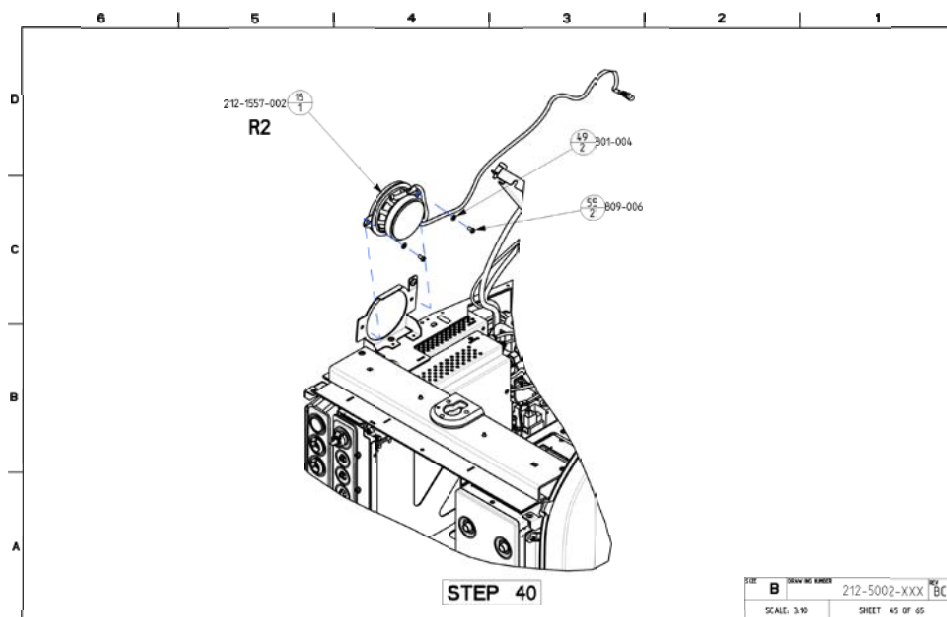


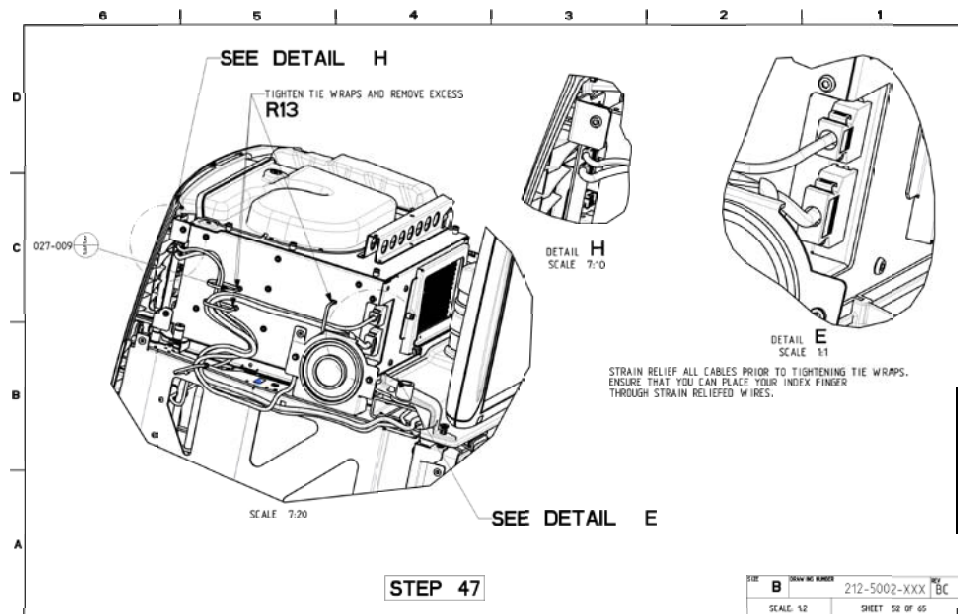
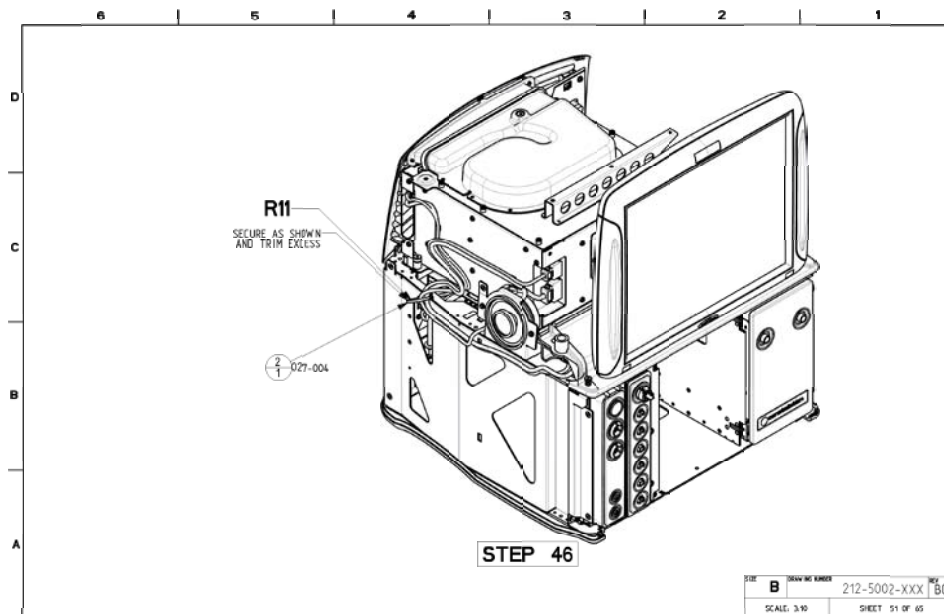
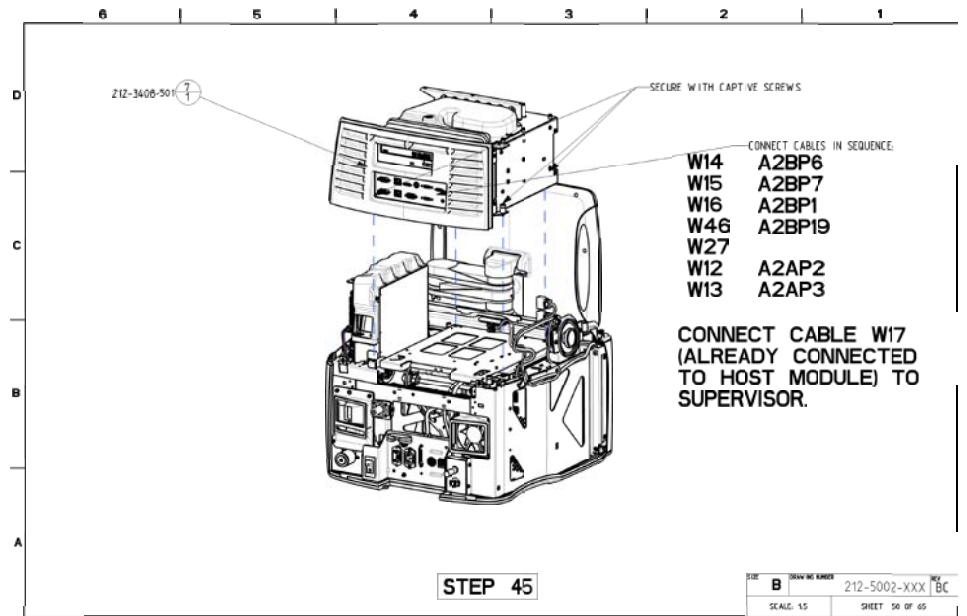
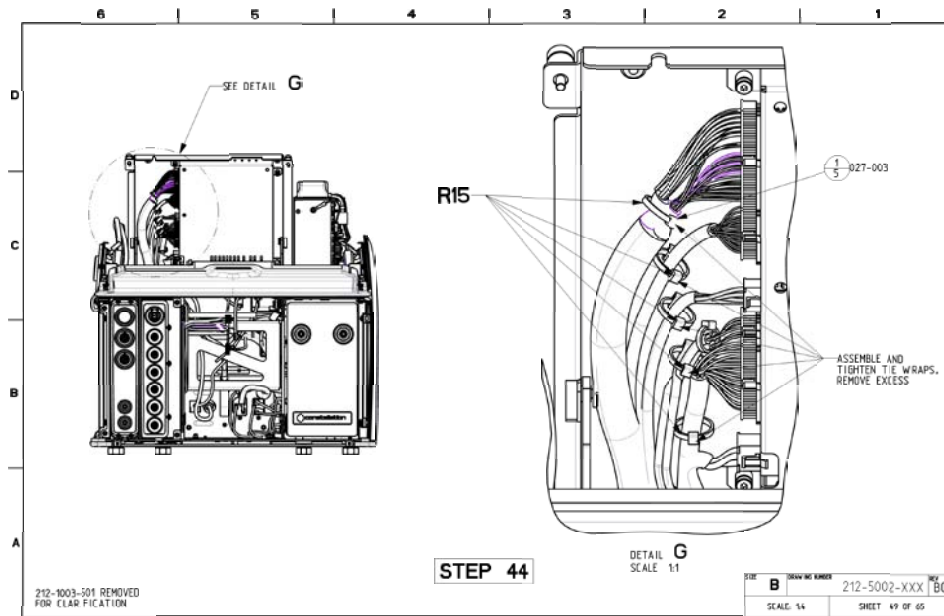


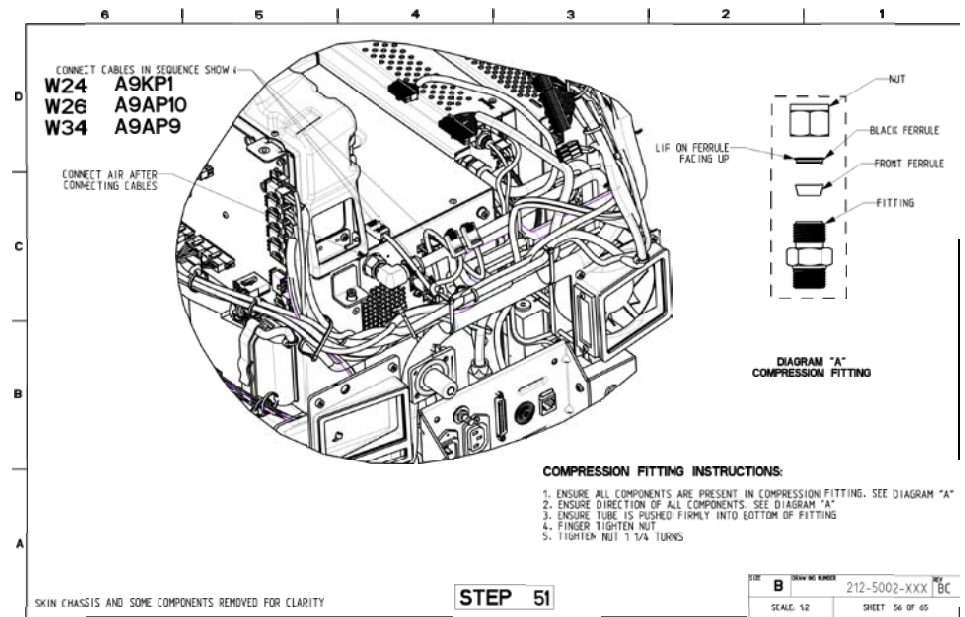
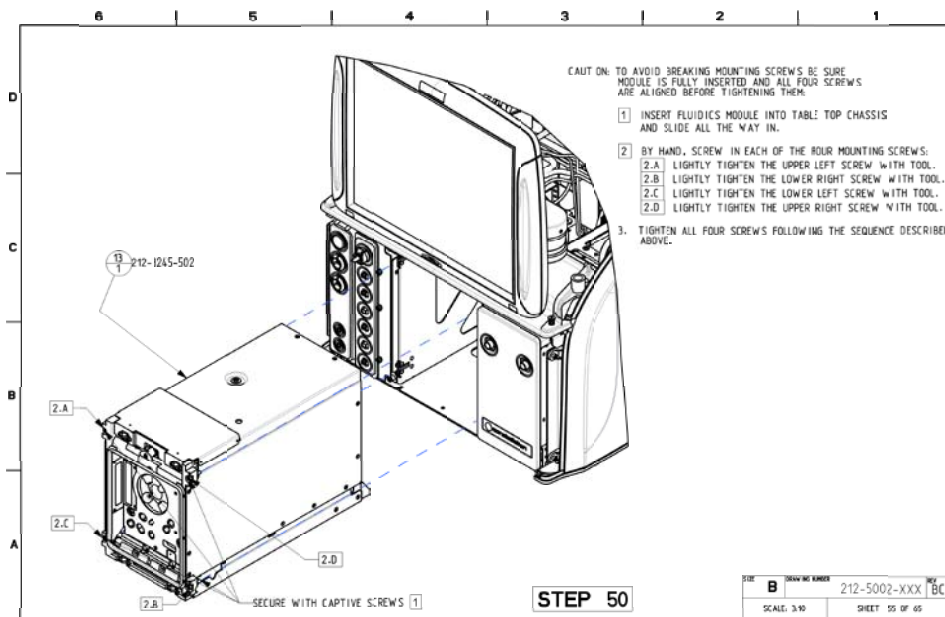
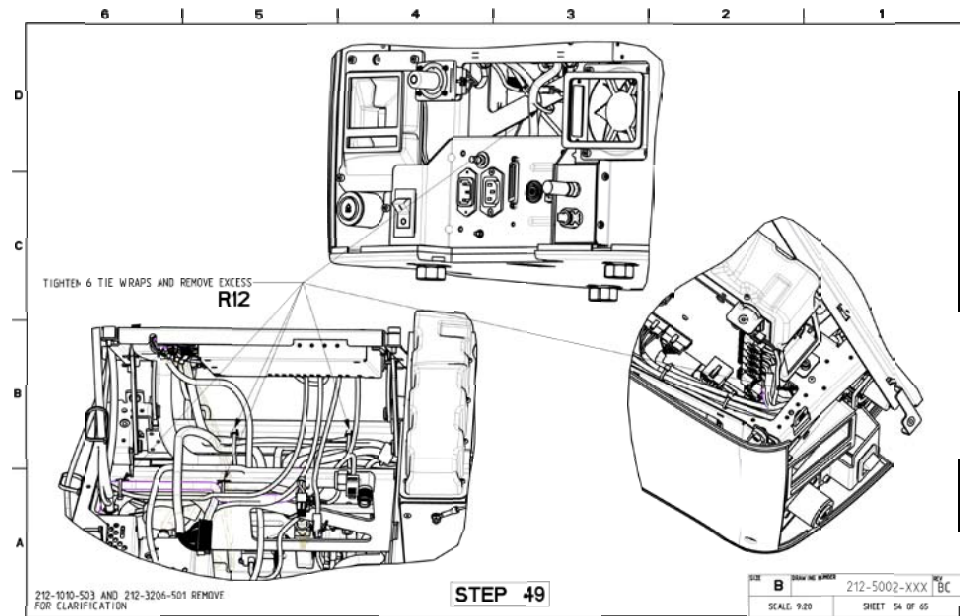
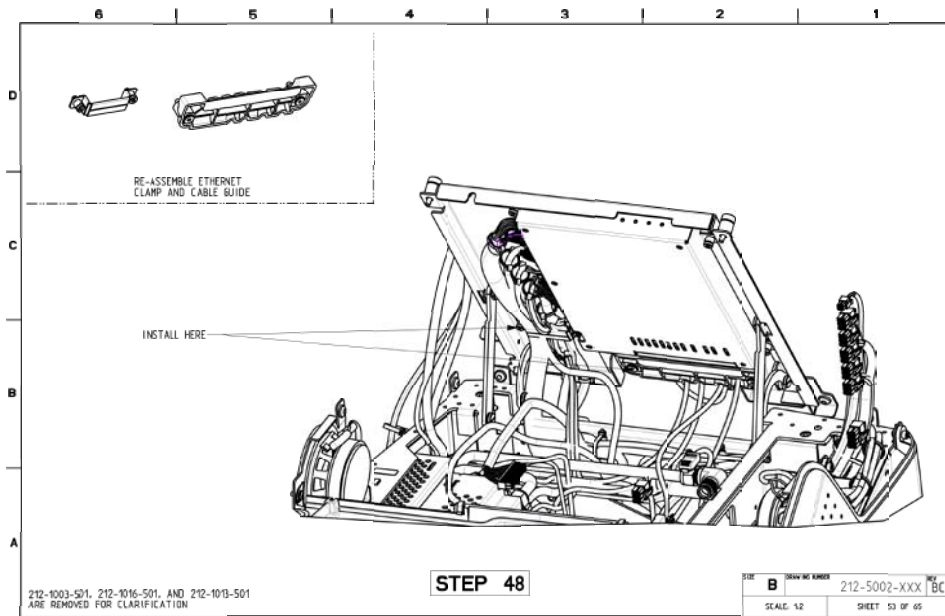


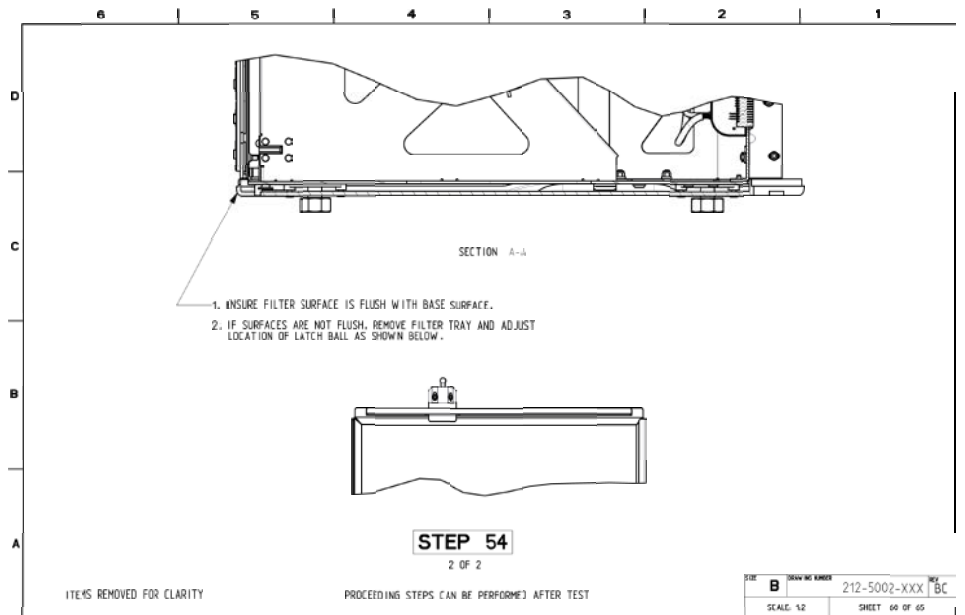
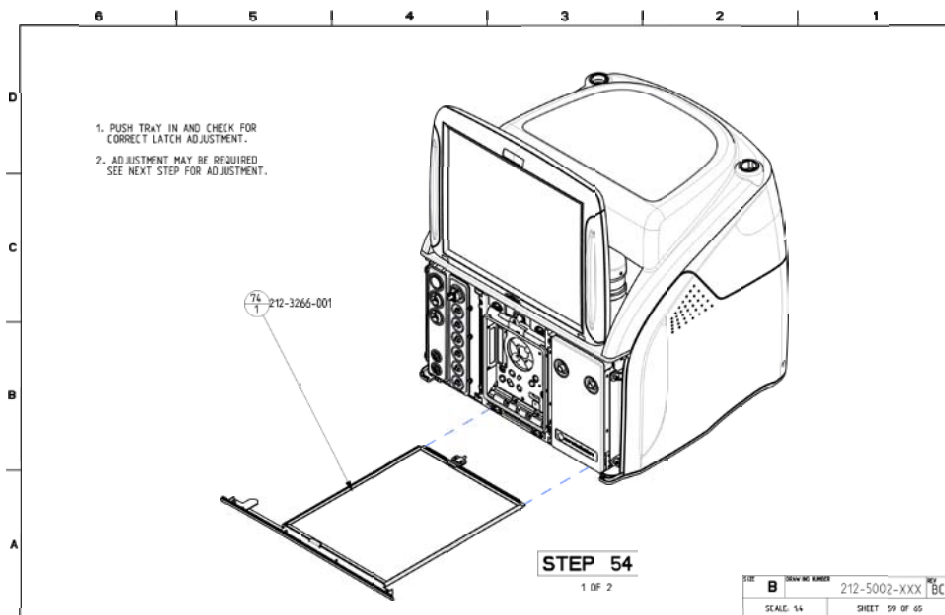
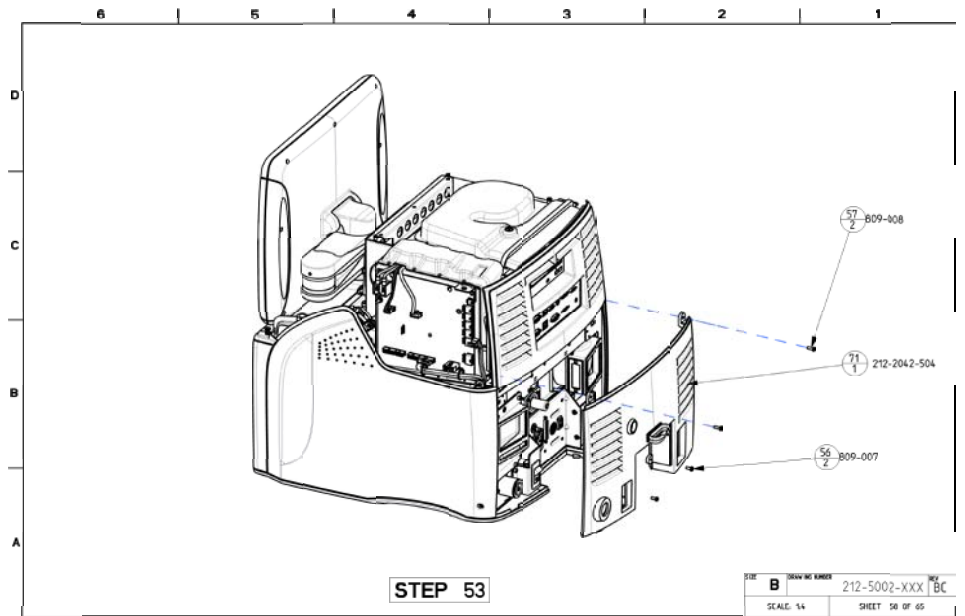
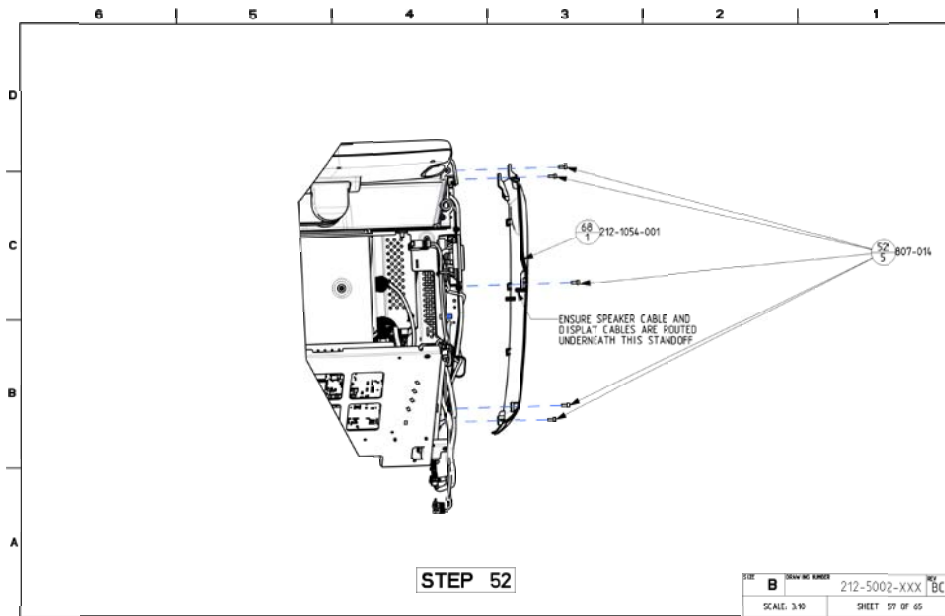


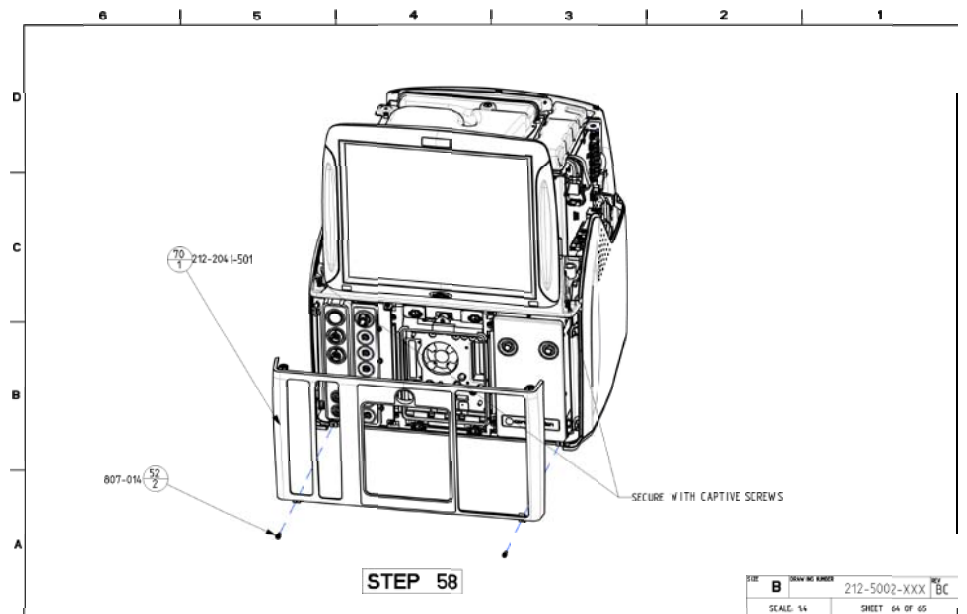
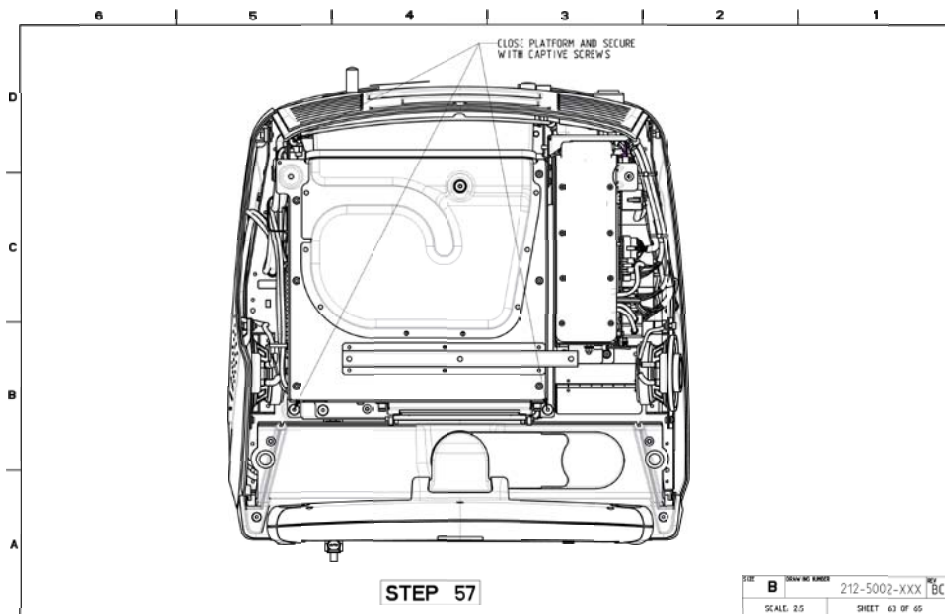
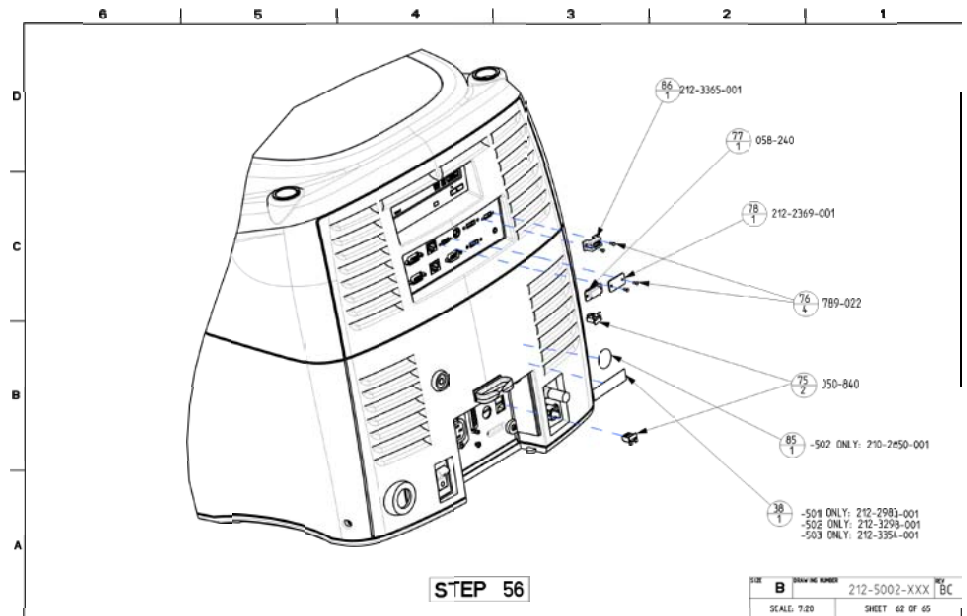
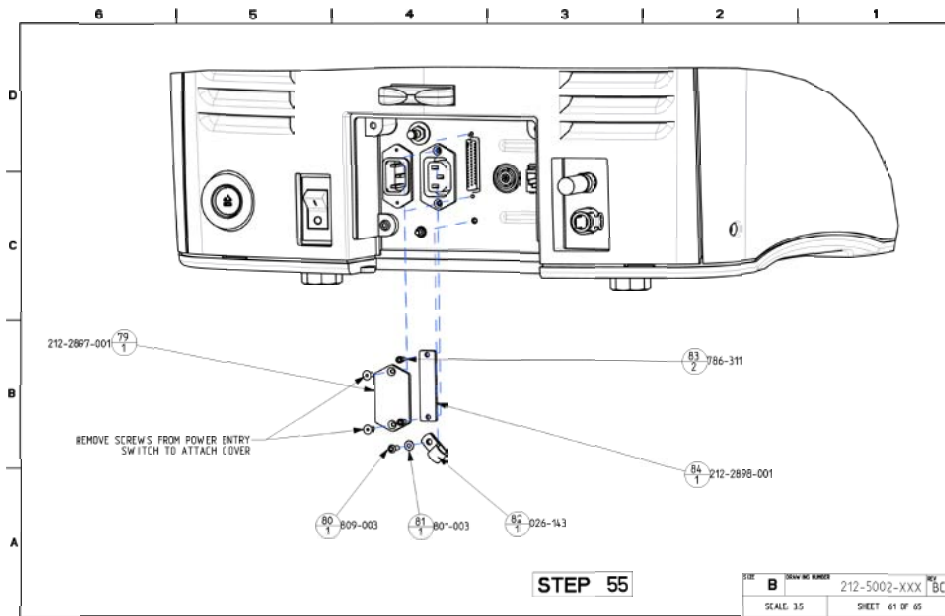


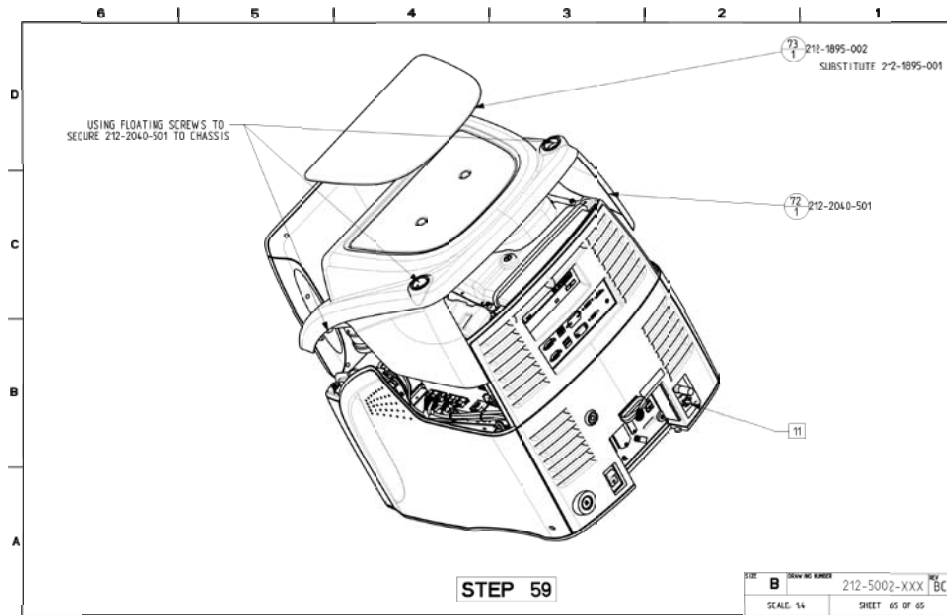












212-3206-501 ASSY, ARM, DISPLAY

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-3211-501	ASSY,DISPLAY,LCD 17IN	1
002	212-1220-502	ASSY,ARTICULATING ARMS,DISPLAY	1
003	807-012	SCREW,CAP HD SKT,M4X6 SST	10
004	797-063	WASHER,EXT LOCK.17X.38X.02 SST	1
005	809-006	SCREW,BTN HD SKT,M4X8 SST	1
006	027-003	CABLE TIE,.625X3.50L,NYLON	2
007	212-1329-002	DOOR,DISPLAY,REAR PAINTED	1
009	807-013	SCREW,CAP HD SKT,M4X8 SST	13
010	212-3210-002	PANEL,DISPLAY,REAR CONSOLE PTD	1
011	212-2891-001	CLAMP,MOUNT,CABLE ARM	3

NOTES: UNLESS OTHERWISE SPECIFIED
 1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
 2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
 3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
 4. *XX INLBS* INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE +10% OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
 5. -SXXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -SXX SERIES P/N.
 6. BUILD PER 992-2120-001 AND TEST PER 907-2120-006.

REVISION HISTORY

REV	ECN	DATE
PS	NOT RELEASED	4/6/09
A	20090660	4/21/09
B	20090757	5/15/09
C	20100957	06/21/10
D	EN01029ECN	05/09/11
E	EN03278ECN	07/23/12
F	EN054873ECN	05/15/16

TABULATION

PART NUMBER	PART NUMBER [5]	REV.	DESCRIPTION
212-3206-501	212-3206-501S	F	ASSY,ARM,DISPLAY
212-3206-502	212-3206-502S	F	ASSY,ARM,DISPLAY

SEE SEPARATE PARTS LIST

QTY PART NUMBER DESCRIPTION MATERIAL/MANUFACTURER ITEM

BILL OF MATERIAL

DESCRIPTION **ASSY,ARM,DISPLAY**

DATE 02/06/09
 CHECKED M. DINH
 DATE 02/18/09
 CHECKED K. SHELTON
 DATE 02/19/09
 CHECKED M. STAUER
 POWER REVISION 2/23/2007

SCALE: 0.400
 SHEET 1 OF 9
 VERSION: F.2

212-3206-502 ASSY, ARM, DISPLAY

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-3398-501	ASSY,DISPLAY,LCD 17IN	1
002	212-1220-502	ASSY,ARTICULATING ARMS,DISPLAY	1
003	807-012	SCREW,CAP HD SKT,M4X6 SST	10
004	797-063	WASHER,EXT LOCK.17X.38X.02 SST	1
005	809-006	SCREW,BTN HD SKT,M4X8 SST	1
006	027-003	CABLE TIE,.625X3.50L,NYLON	2
007	212-1329-002	DOOR,DISPLAY,REAR PAINTED	1
009	807-013	SCREW,CAP HD SKT,M4X8 SST	13
010	212-3210-002	PANEL,DISPLAY,REAR CONSOLE PTD	1
011	212-2891-001	CLAMP,MOUNT,CABLE ARM	3

NOTE: DEPENDING ON WHICH FRONT PANEL DISPLAY IS USED THE INVERTER AND CABLING MAY LOOK DIFFERENT.

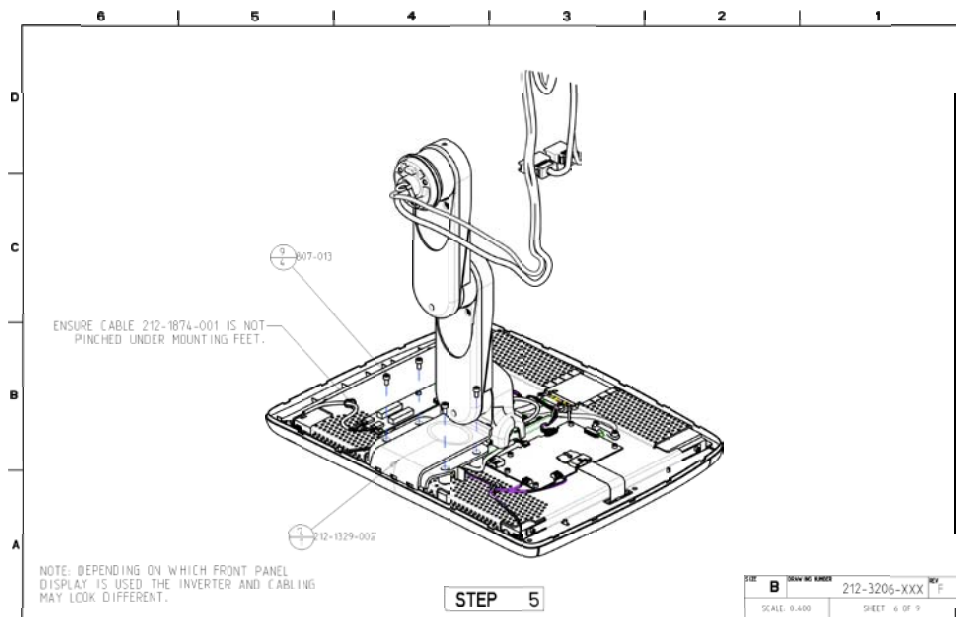
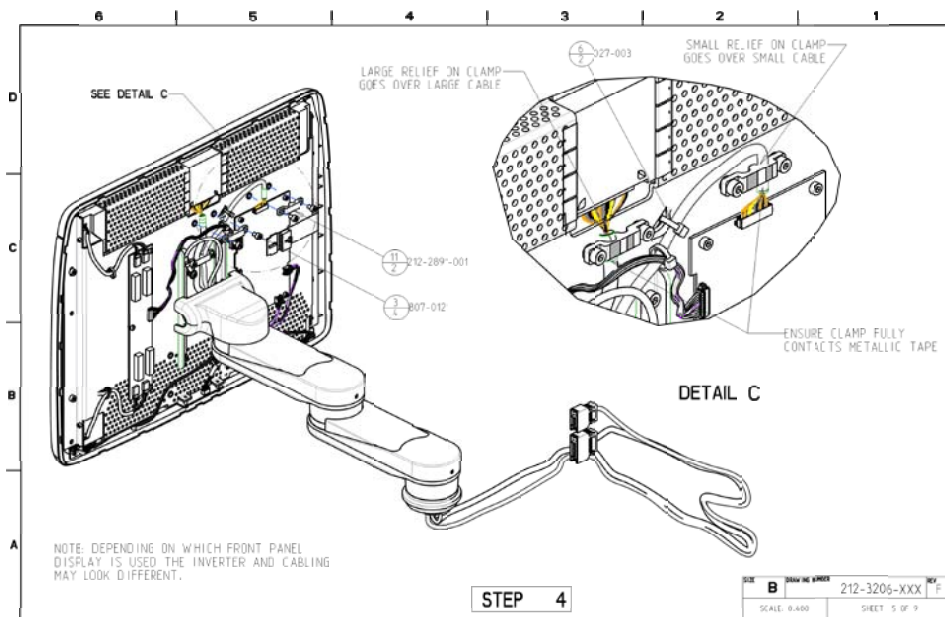
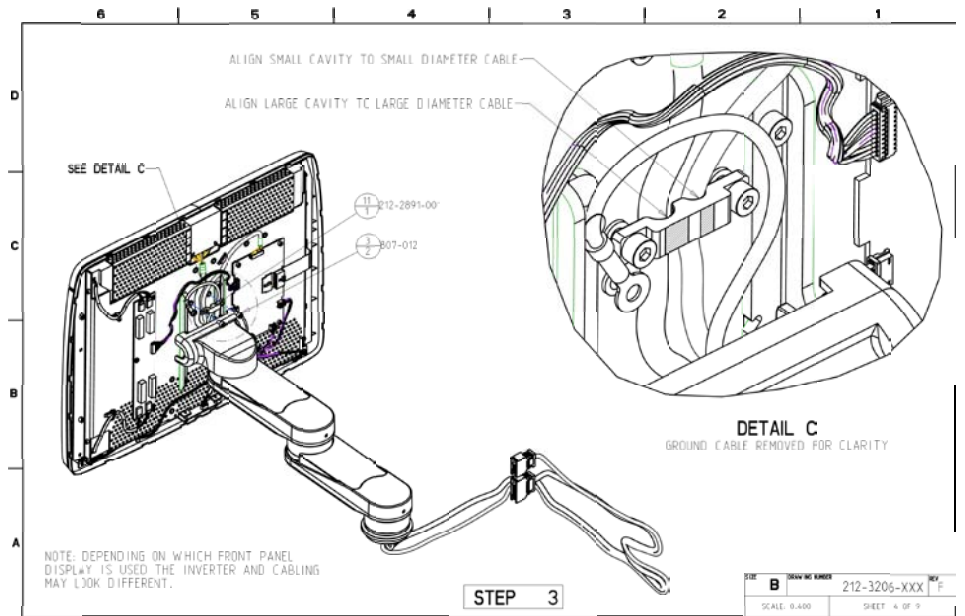
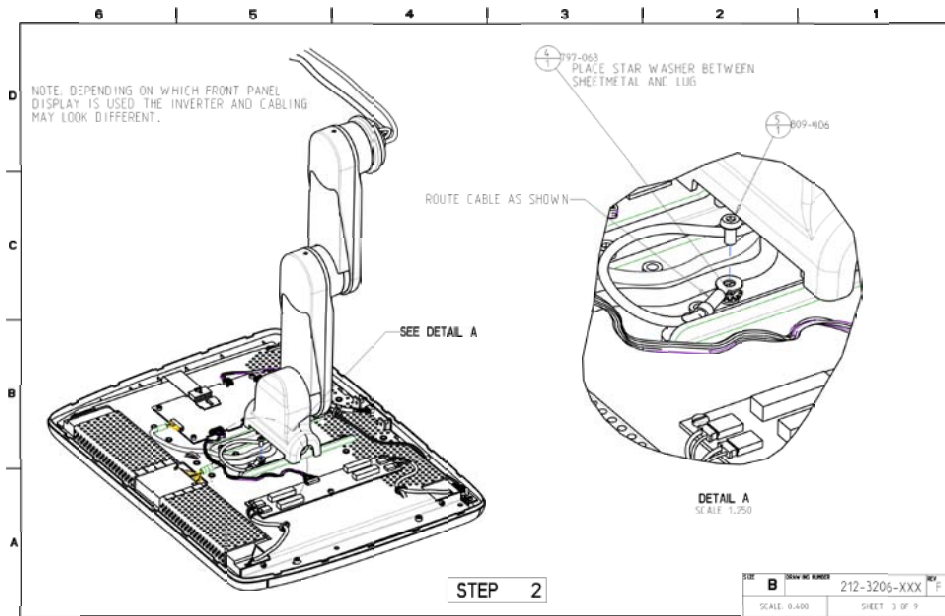
STEP 1

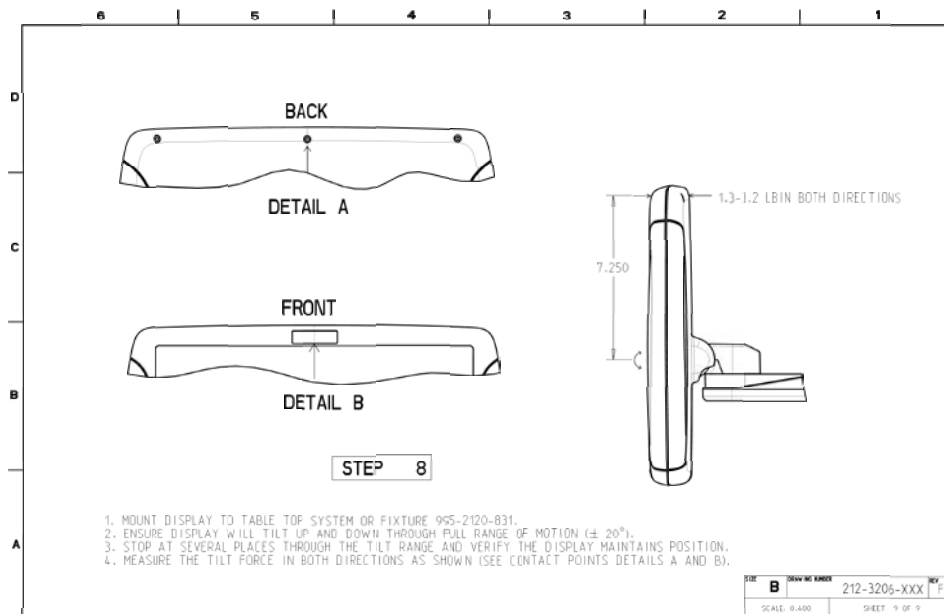
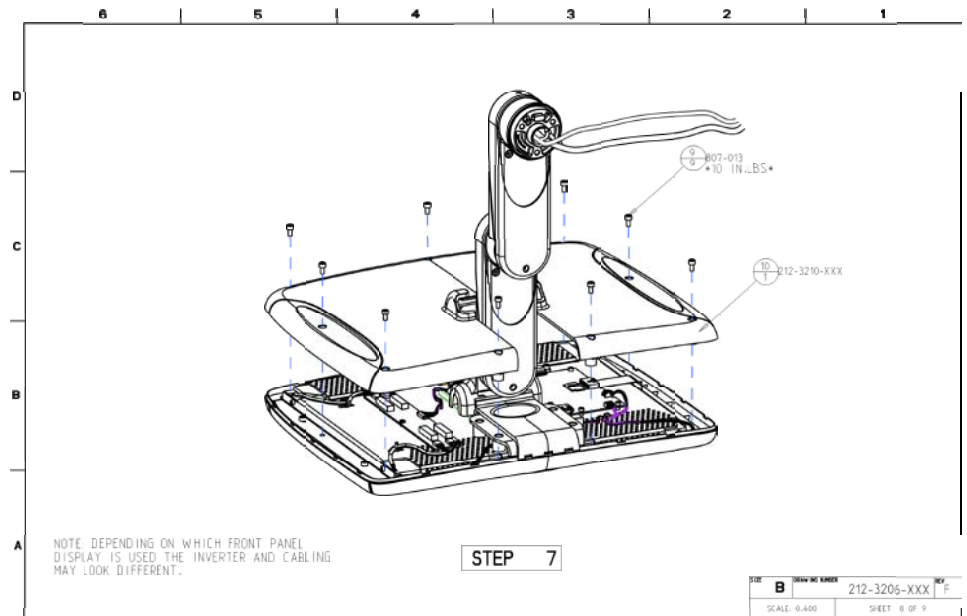
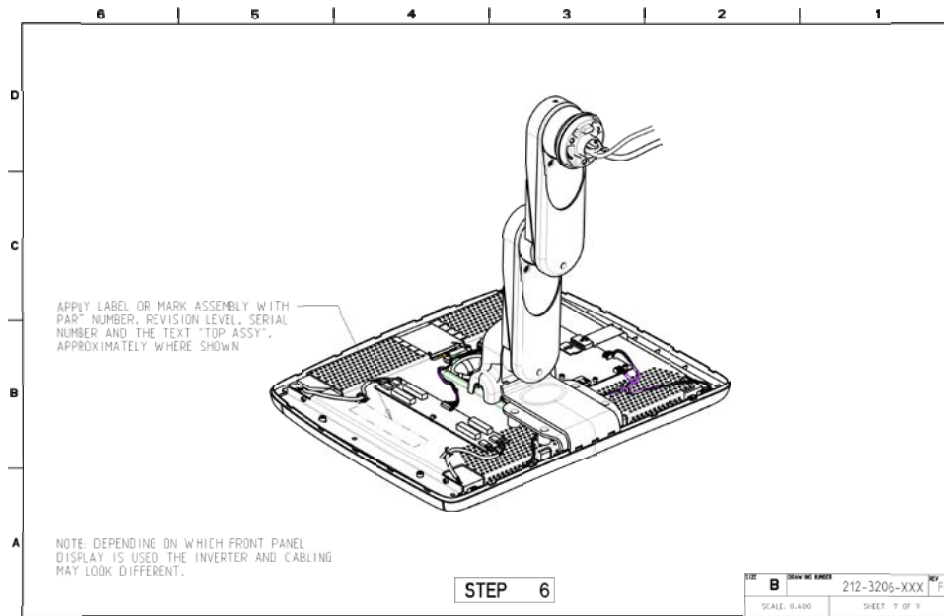
212-1220-502

807-012

212-3211-501 FOR 212-3206-501
 212-3398-501 FOR 212-3206-502

SCALE: 0.400
 SHEET 2 OF 9





212-3211-501 ASSY, DISPLAY, LCD 17 IN (OLD)

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2581-501	ASSY,DISPLAY,NAMEPLATE	1
002	807-002	SCREW,CAP HD SKT,M3X6 SST	4
004	212-2825-001	TOUCH SCREEN,17IN,RES 8-WIRE	1
005	088-071	DISPLAY,LCD,TFT COLOR 17.0	1
006	212-1501-001	GASKET,LCD	1
007	212-3205-001	FRAME,DISPLAY,LCD	1
009	807-012	SCREW,CAP HD SKT,M4X6 SST	4
010	212-3326-501	ASSY,PCB,DISPLAY INTERFACE	1
011	807-001	SCREW,CAP HD SKT,M3X5 SST	7
013	212-1834-502	ASSY,PCB,SD CARD READER	1
014	276-321	INVERTER,DC TO AC,BACKLT 4CCFL	1
015	210-1655-503	ASSY,PCB,IR SENSOR	2
016	807-147	SCREW,CAP HD SKT,M2.5X5 SST	4
017	212-1873-001	CABLE ASSY,BLT INVERT,W161	1
018	212-1876-001	CABLE ASSY,SD CARD RDR,W164	1
019	212-1874-001	CABLE ASSY,IR SNSR RT,W162	1
020	212-1875-001	CABLE ASSY,IR SNSR LT,W163	1
023	802-004	WASHER,RET.,266X.102X.032 NYL	6
024	777-479	SCREW,PAN HD,W/COAT M3X6 POLY	3
026	027-003	CABLE TIE,.625X3.50L,NYLON	4
027	041-027	SHIELDING,EMI CLIP ON,REV BND	2

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. XX IN.-BS INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE $\pm 10\%$ OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
5. DELETEC.
6. BUILD PER MAP 992-2120-001 AND TEST PER 907-2120-006. (TEST FOR -50°F ONLY).

REVISION HISTORY

REV	ECN	DATE
F	20102060	12/03/10
G	CN019525ECN	07/21/11
H	CN053326ECN	03/05/14

TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-3211-501	ASSY,DISPLAY,LCD 17IN	212-3211-501FS	H	ASSY,DISPLAY,LCD 17IN SERVICE

SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	212-3211-501	ASSY,DISPLAY,LCD 17IN		

BILL OF MATERIAL

BY	DATE	THIS DOCUMENT CONTAINS PROPERTY INFORMATION. IT IS TO BE KEPT UNDER CONTROL AND NOT REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION OF ALCON.	DESCRIPTION	SIZE	SCALE	DATE	REV
M.DINH	01/22/09		ASSY,DISPLAY,LCD 17IN	B	9:20	02/18/09	H
R. SHELTON	02/18/09					02/19/09	
R. STALJEER	02/19/09					2/23/2007	
PRINT REVIEW	2/23/2007						

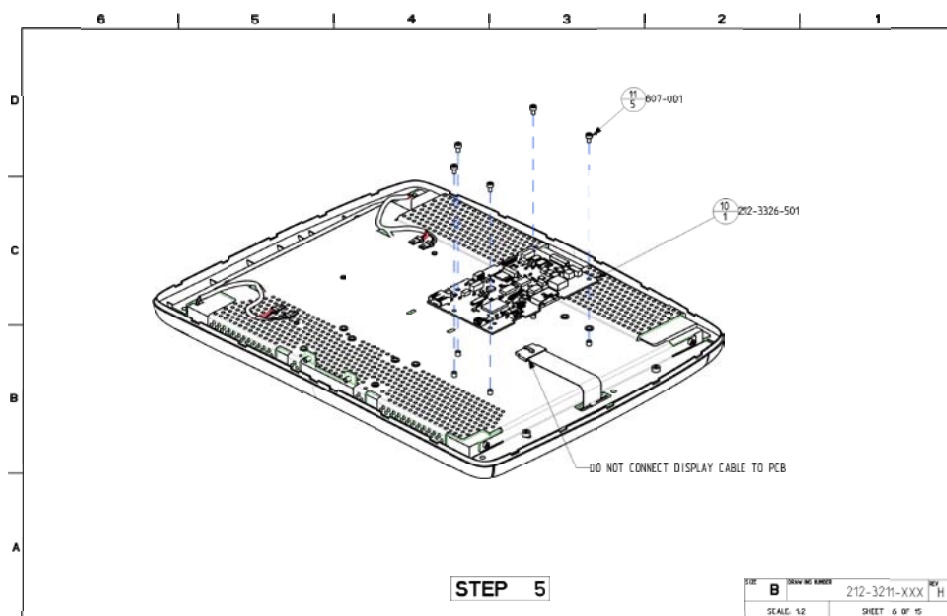
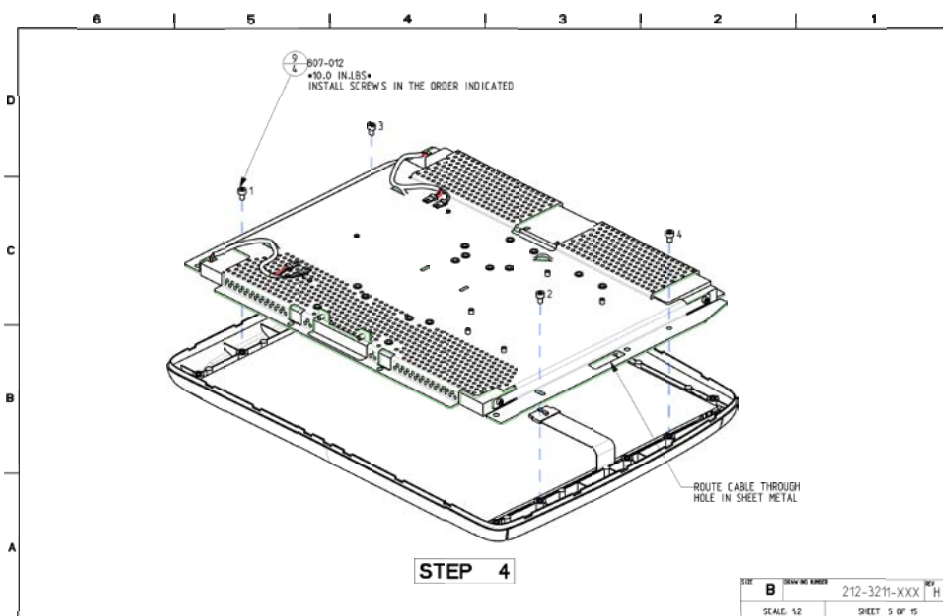
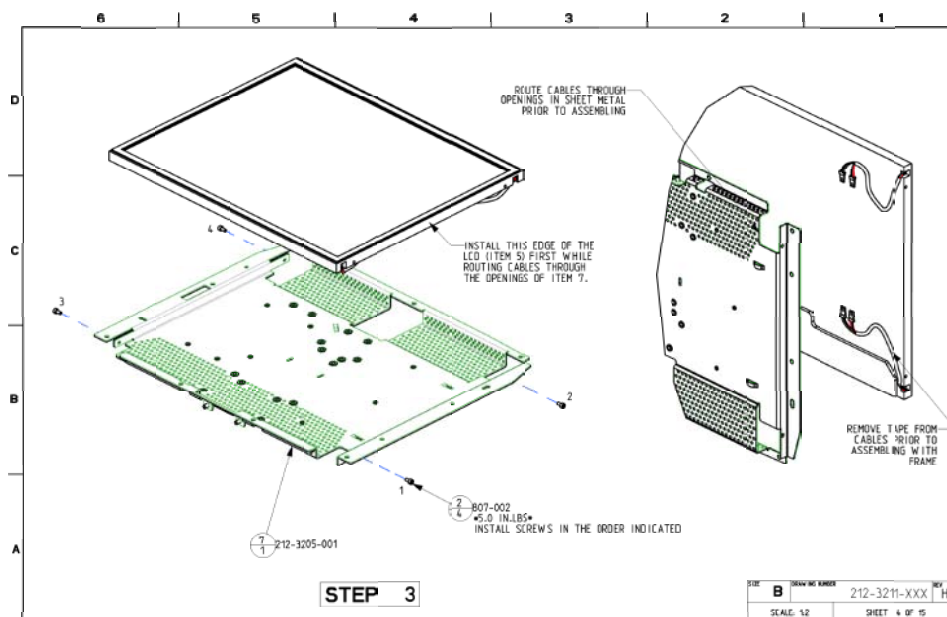
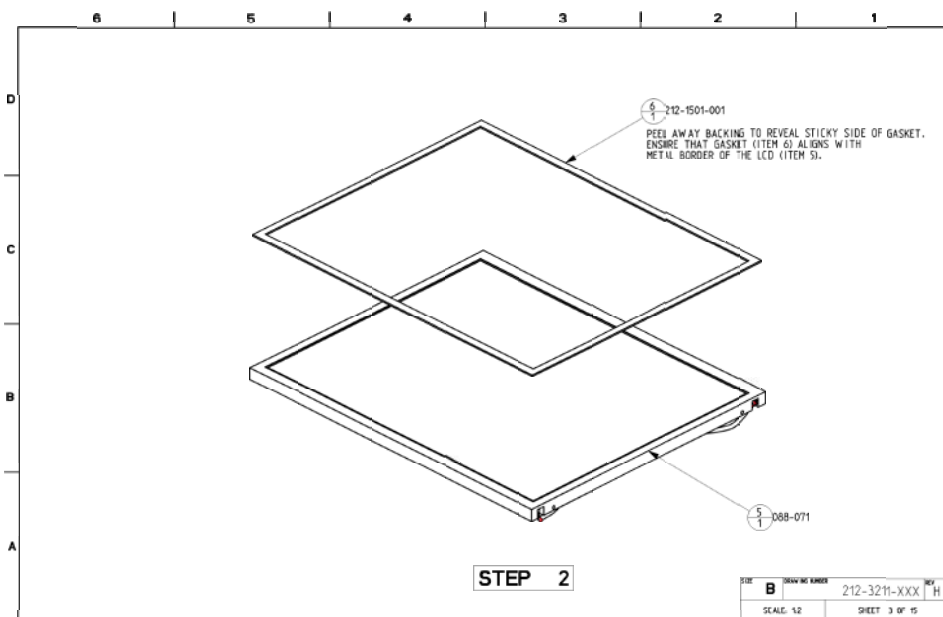
POMLINK MODEL ATTRIBUTES NAME: 212-3211-501.PROD VERSION: H.7

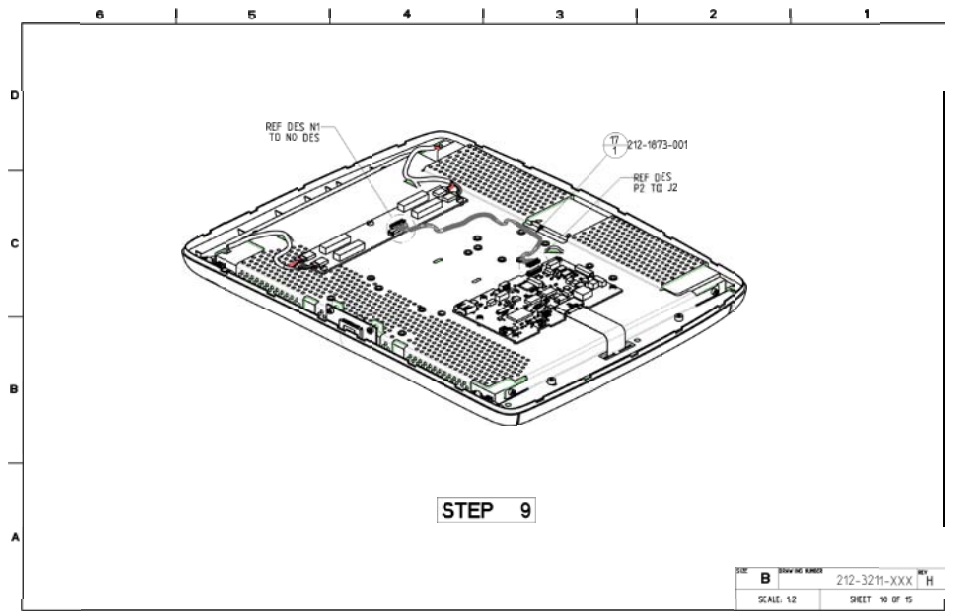
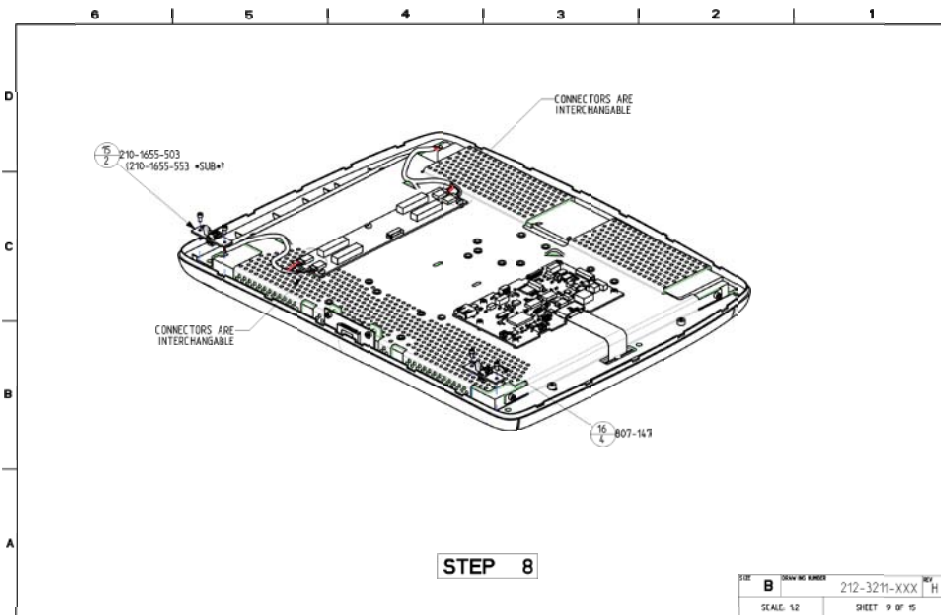
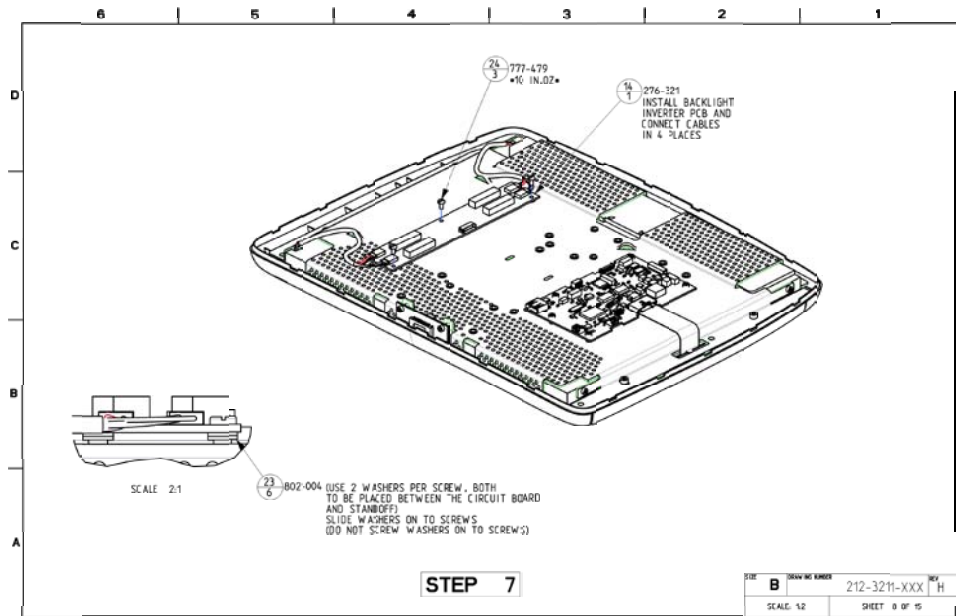
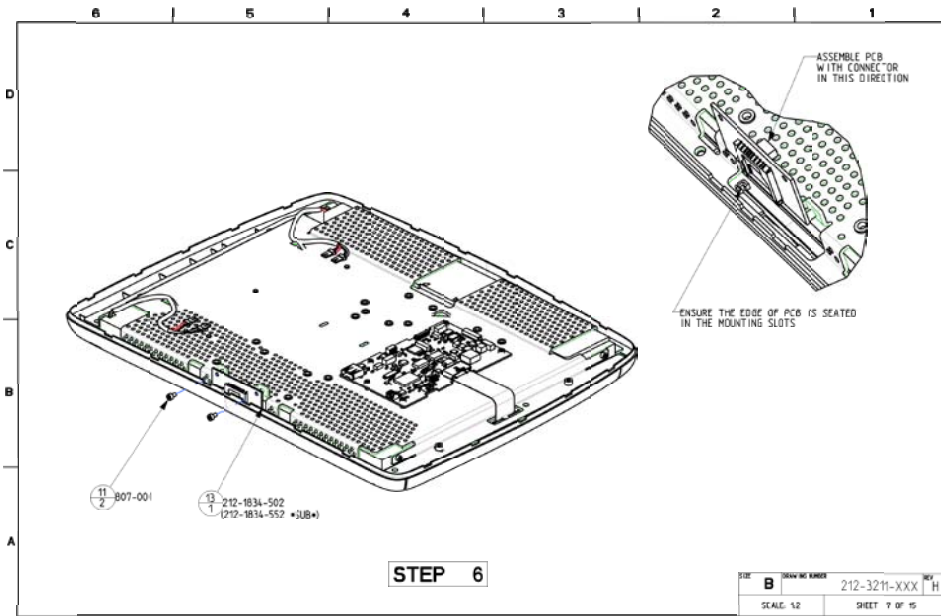
NOTE ORIENTATION OF TOUCH SCREEN CABLE

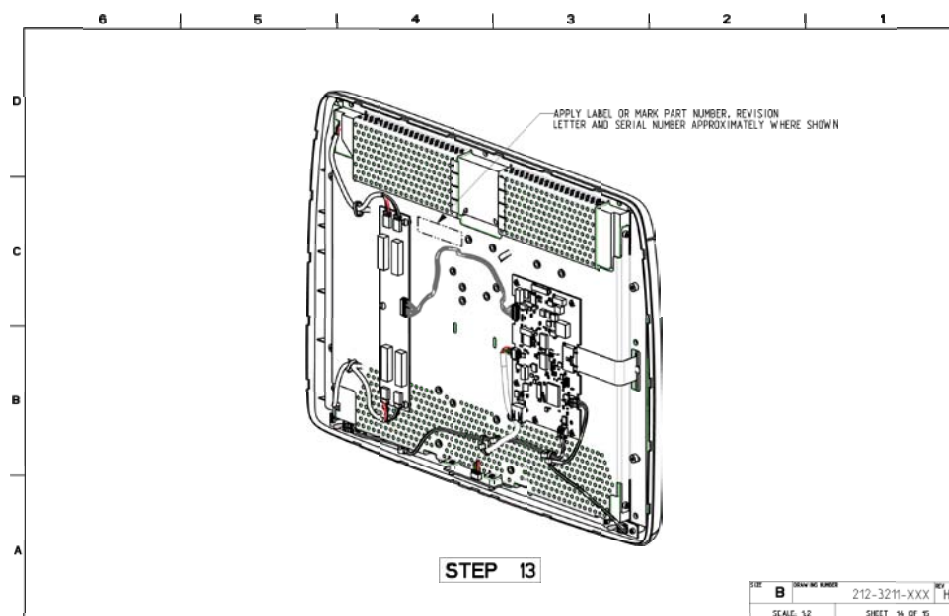
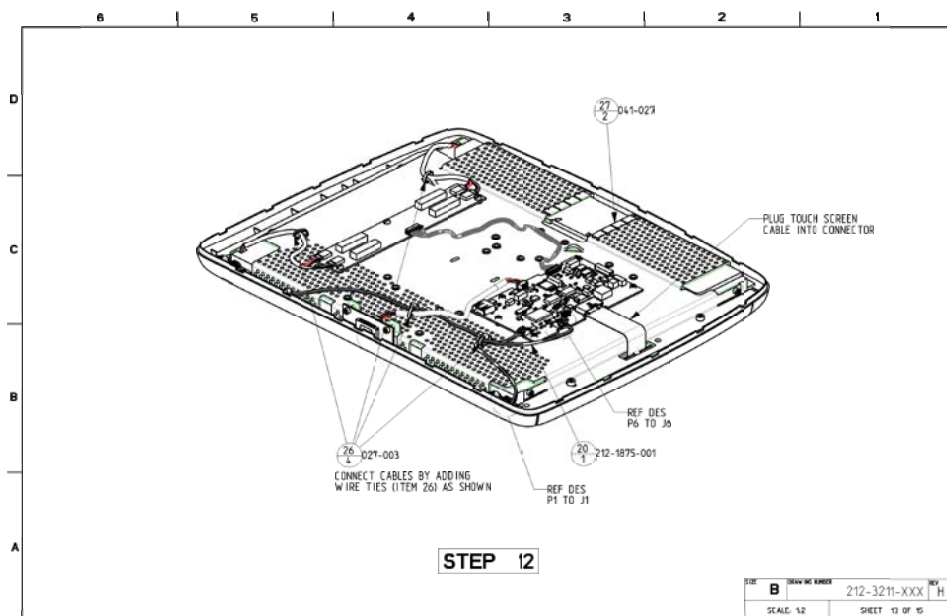
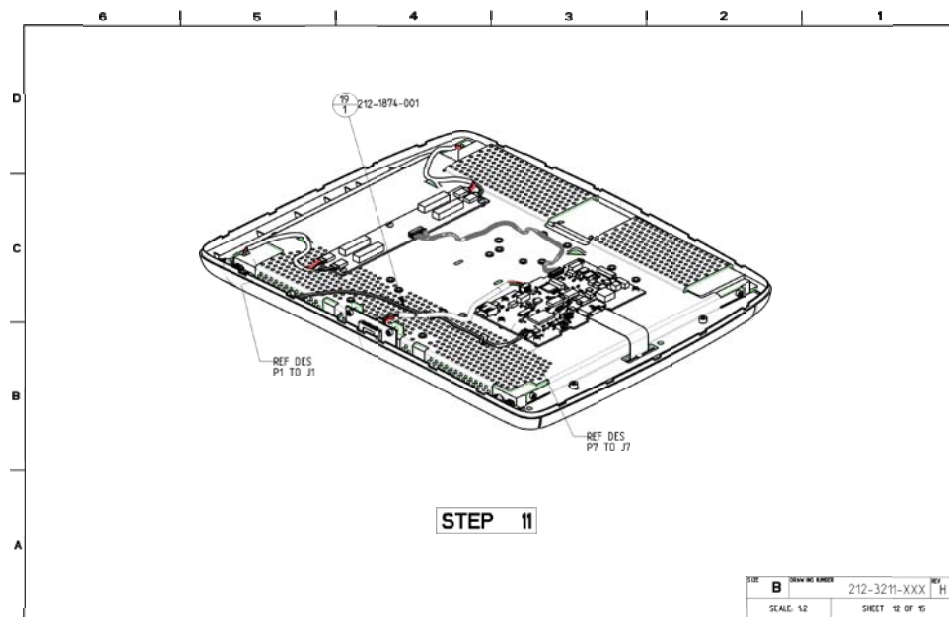
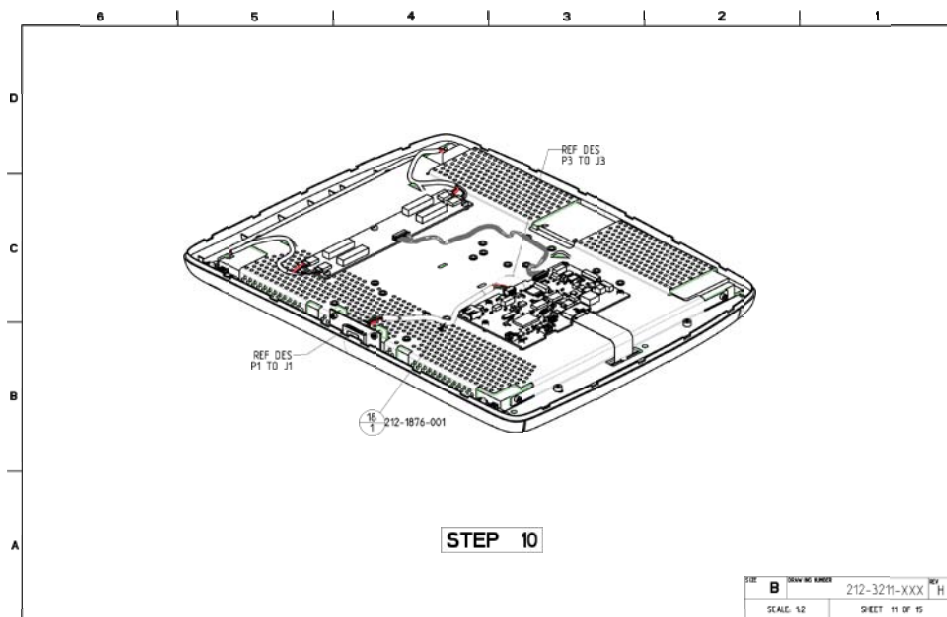
STEP 1

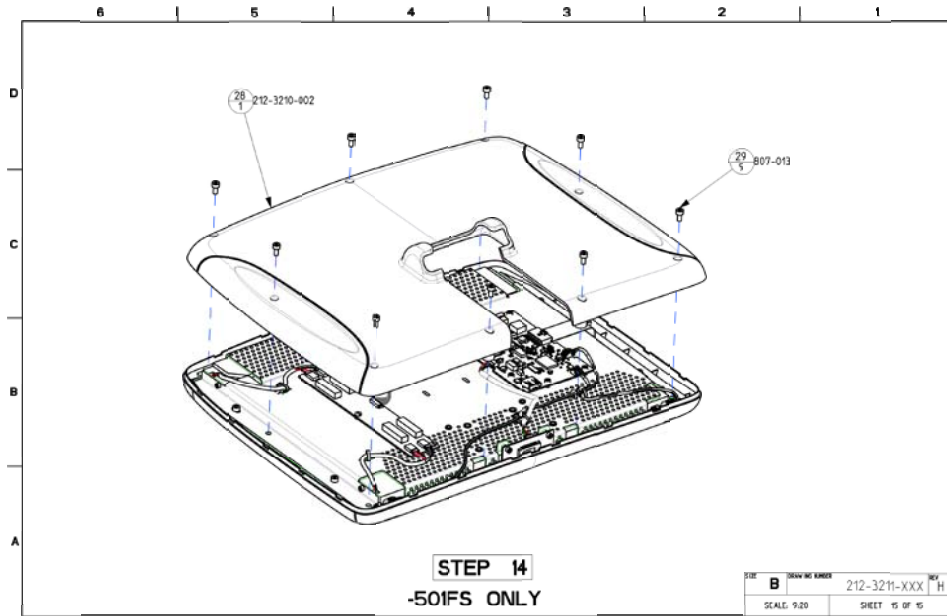
SIZE	DRAWING NUMBER	REV
B	212-3211-XXX	H

SCALE: 1:2 SHEET 2 OF 15









212-3398-501 ASSY, DISPLAY, LCD 17 IN (New)

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-2581-501	ASSY,DISPLAY,NAMEPLATE	1
2	807-002	SCREW,CAP HD SKT,M3X6 SST	4
4	212-2825-001	TOUCH SCREEN,17IN,RES 8-WIRE	1
5	088-077	DISPLAY,LCD,TFT COLOR 17.0	1
6	212-1501-001	GASKET,LCD	1
7	212-3397-001	FRAME,DISPLAY,LCD	1
9	807-012	SCREW,CAP HD SKT,M4X6 SST	4
10	212-3326-501	ASSY,PCB,DISPLAY INTERFACE	1
11	807-001	SCREW,CAP HD SKT,M3X5 SST	7
13	212-1834-502	ASSY,PCB,SD CARD READER	1
14	276-388	INVERTER,DC TO AC,BACKLIGHT	1
15	210-1655-503	ASSY,PCB,IR SENSOR	2
16	807-147	SCREW,CAP HD SKT,M2.5X5 SST	4
17	212-3401-001	CABLE ASSY,BLT INVERT	1
18	212-1876-001	CABLE ASSY,SD CARD RDR,W164	1
19	212-1874-001	CABLE ASSY,IR SNSR RT,W162	1
20	212-1875-001	CABLE ASSY,IR SNSR LT,W163	1
23	802-010	WASHER,RET.,265X.102X.062 NYL	2
24	777-479	SCREW,PAN HD,W/COAT M3X6 POLY	2
25	777-485	SCREW,PAN HD,W/COAT M3X4 POLY	1
26	027-003	CABLE TIE,.625X3.50L,NYLON	4

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. XX IN.LBS INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE $\pm 10\%$ OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
5. BUILD PER MAP 992-2120-001 AND TEST PER 907-2120-006. (TEST FOR -50°F'S ONLY).

REVISION HISTORY

REV	ECN	DATE
P6	NOT RELEASED	12/09/11
A	CN032250ECN	07/02/12

TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-3398-501	ASSY.DISPLAY.LCD 17IN	212-3398-501FS	A	ASSY.DISPLAY.LCD 17IN SERVICE

SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY R. HURTARTE DATE 6/16/11		THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION OF ALCON.		
CHECKED D. CHOYANEC DATE 6/20/11				
APPROVED J. FOSTER DATE 6/20/11		DESCRIPTION: ASSY.DISPLAY.LCD 17IN DRAWING NUMBER: 212-3398-XXX SCALE: 9:20 SHEET 1 OF 15 VERSION: A.1		
UNLESS OTHERWISE SPECIFIED		PO/MLINK MODEL ATTRIBUTES: NAME: 212-3398-501_PROC		

NOTE ORIENTATION OF TOUCH SCREEN CABLE

212-2825-001

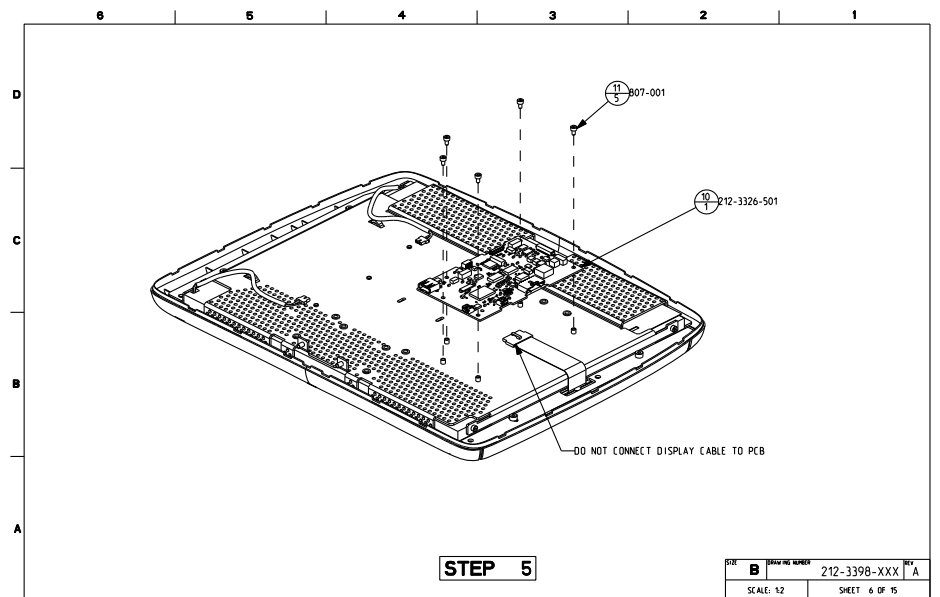
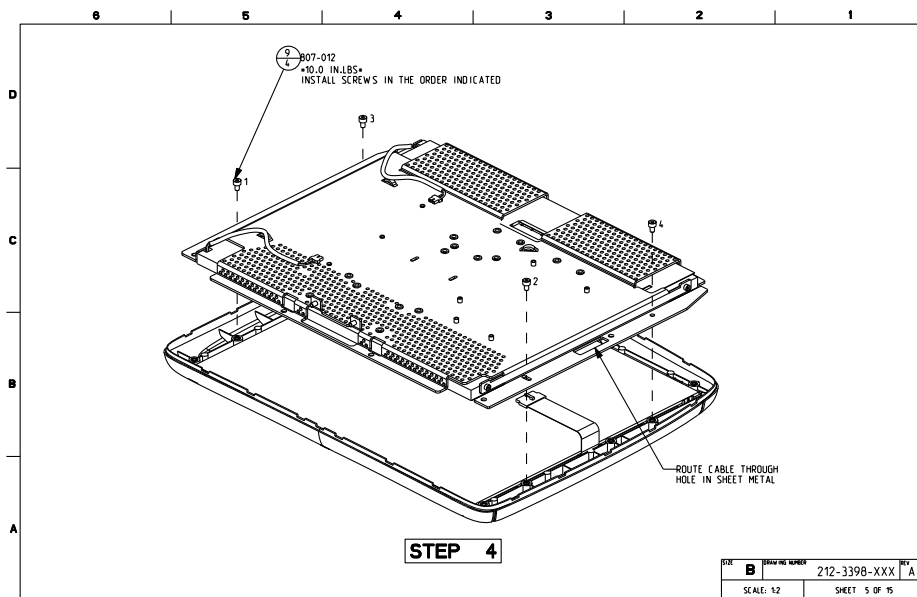
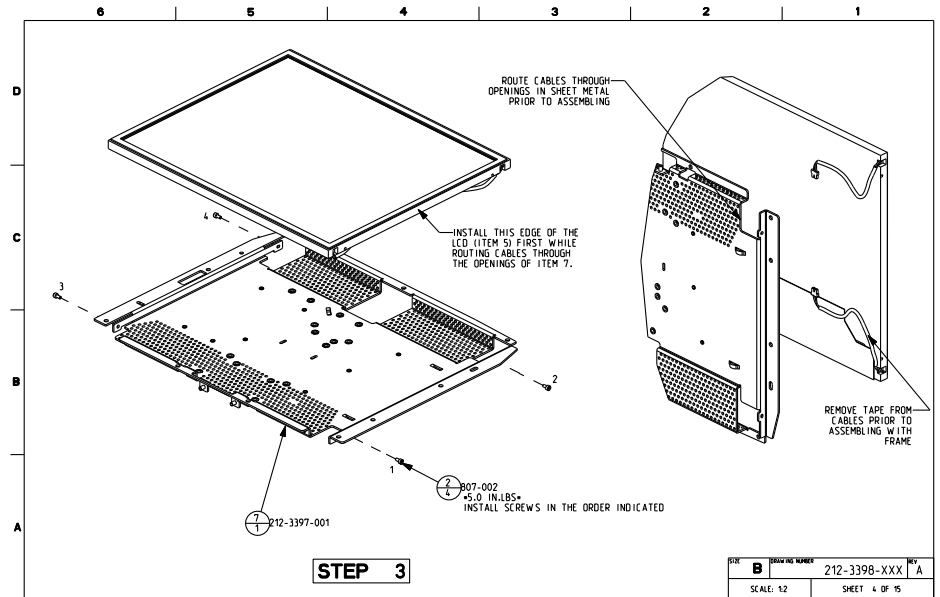
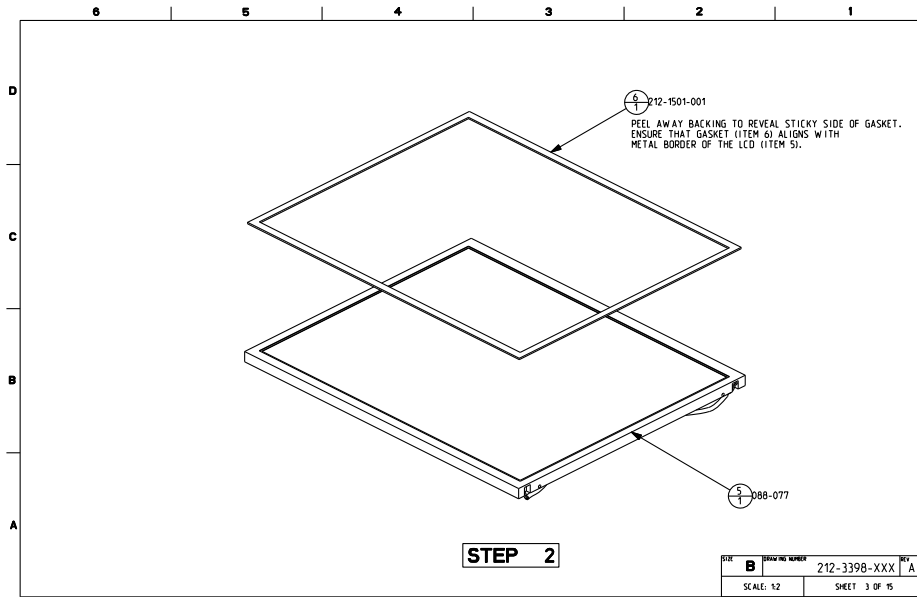
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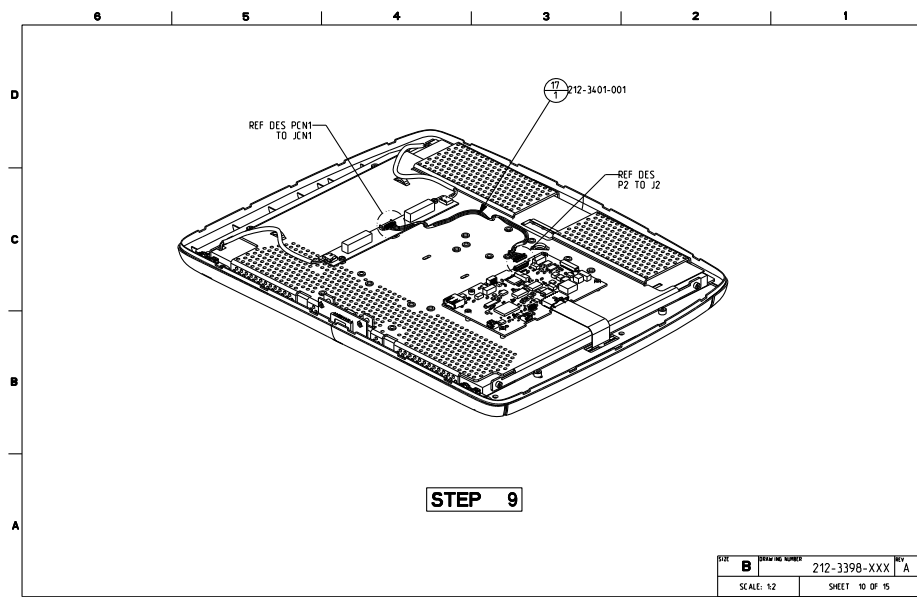
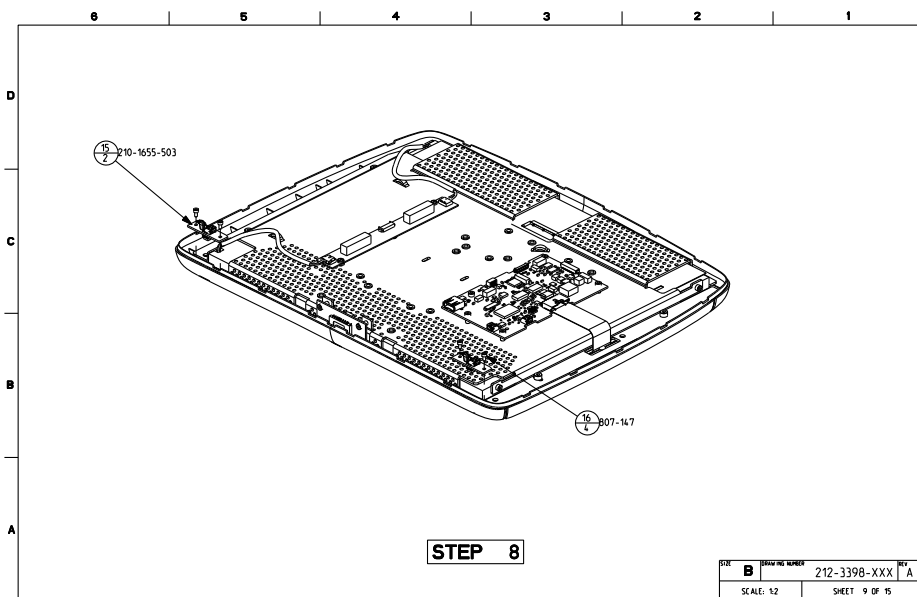
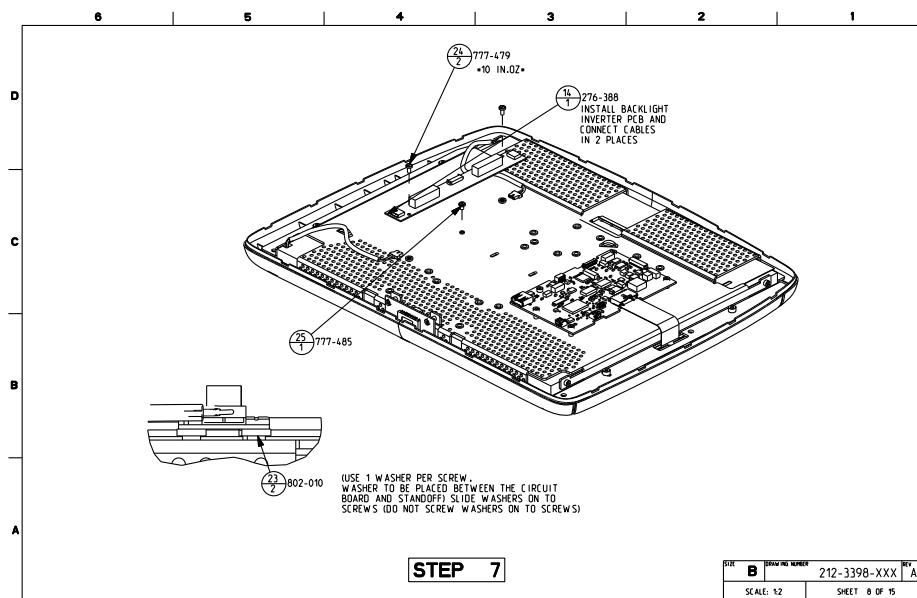
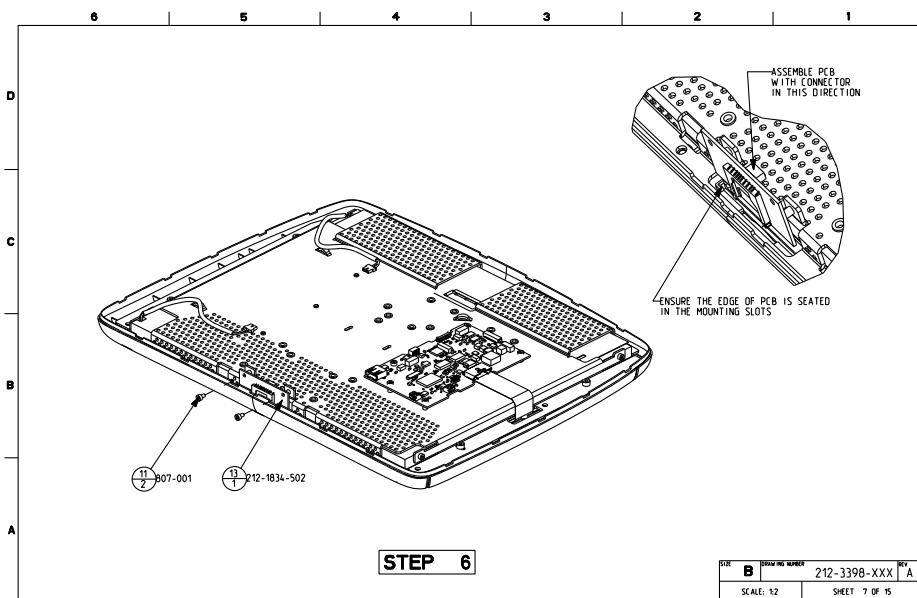
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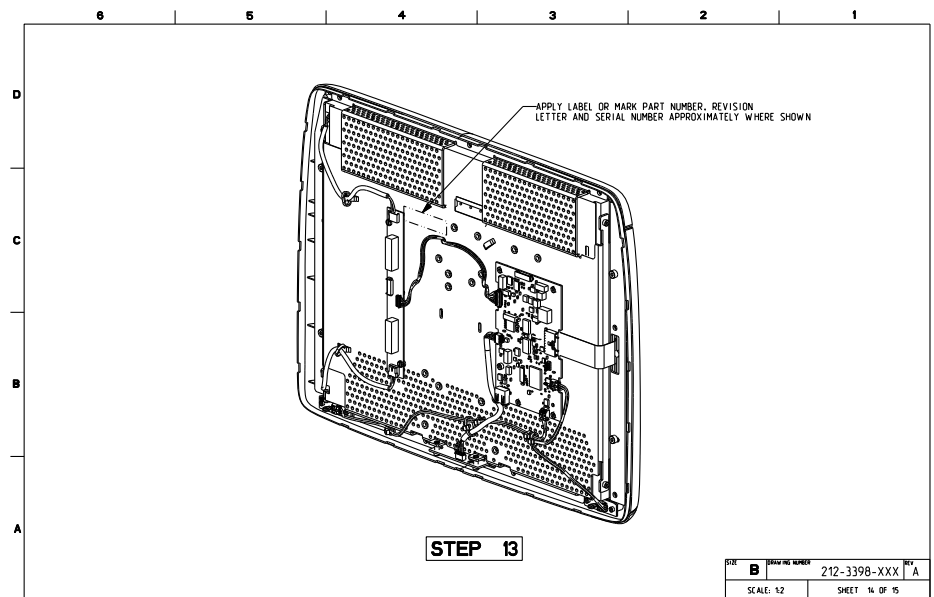
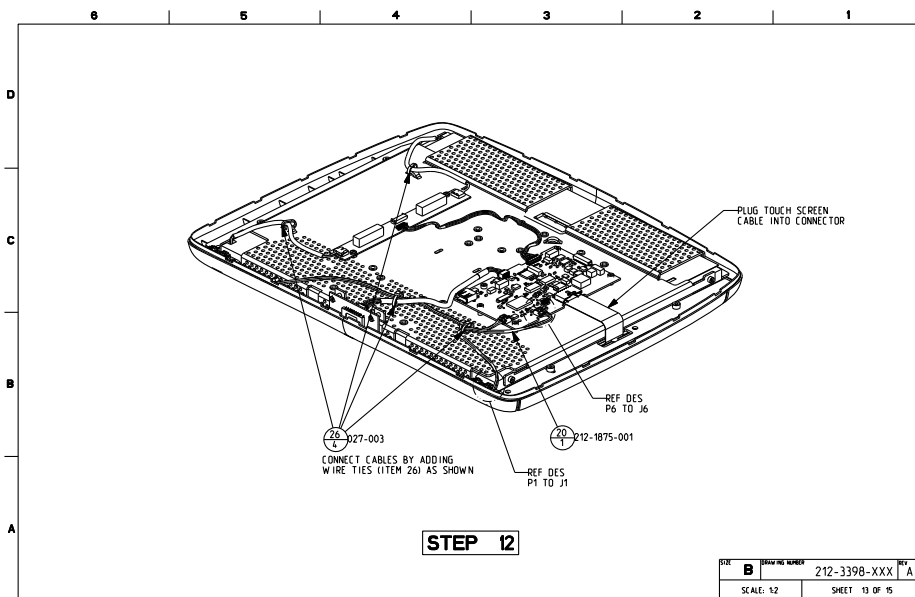
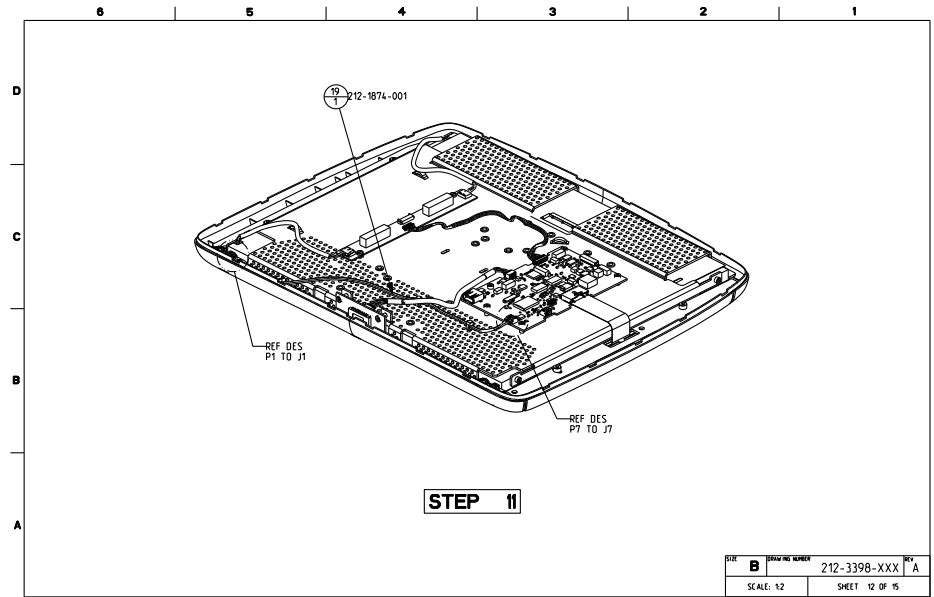
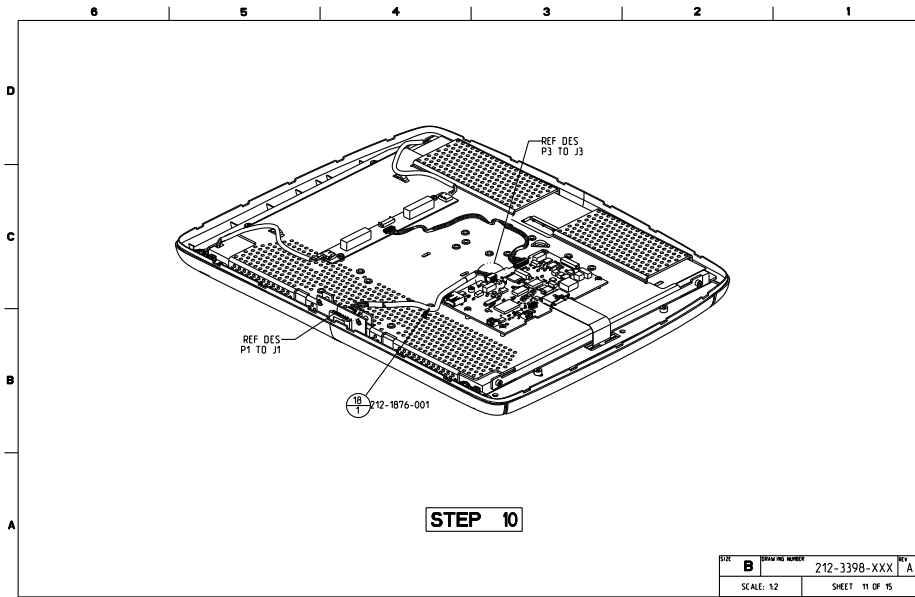
STEP 1

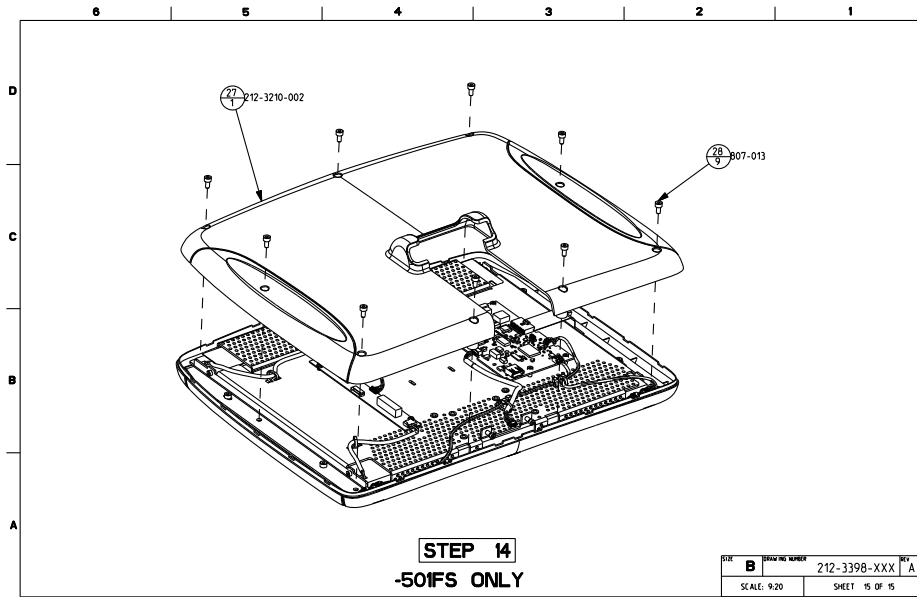
REV	ECN	DATE
B	212-3398-XXX	A

SCALE: 1:2 SHEET 2 OF 15









212-1220-501 ASSY, ARTICULATING ARMS, DISPLAY

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-3202-001	CUP,ARM,DISPLAY HT MACHINED	2
002	212-2132-001	BEARING,BALL.25MM BORE DBL ROW	3
003	212-1330-001	COLLAR,BEARING	2
004	212-2374-001	BASE,DISPLAY,MACHINED	1
005	212-1665-001	SPRING,DISK,050	6
006	212-1502-001	WASHER,TAB	1
007	212-1319-001	WASHER,1.20X2.00X.119 DELRIN	1
008	212-1503-001	NUT,RETAINER,BEARING	1
009	212-2375-001	SHAFT,ARM,DISPLAY MACHINED	2
010	212-1224-001	RING,STOP,DISPLAY	1
011	212-3203-001	CUP,TILT ARM,DISP HT MACHINED	1
012	212-1842-001	TUBE,SPRING,DELIN	1
013	212-1664-001	SPRING,DISPLAY,GRAVITY	1
014	212-1229-001	ARM,TILT,DISPLAY	2
015	212-1325-001	BUSHING,ARM,TILT	2
016	212-1662-001	SHAFT,TILT	1
017	809-016	SCREW,BTN HD SKT,M6X10 SST	2
018	212-1663-001	SPRING,DISK,TILT	4
019	212-1504-001	WASHER,SHIM,TILT	2
020	212-1871-001	CABLE ASSY,VIDEO,LVDS W12	1
021	212-1872-001	CABLE ASSY,INTERFACE,DSPL W13	1
022	212-3209-001	CABLE ASSY,GROUND,W157	1
023	891-027	LUBRICANT,PFPE/PTFE,8981	1
024	807-013	SCREW,CAP HD SKT,M4X8 SST	8
025	212-1226-002	PANEL,TILT ARM,DISPLAY PAINTED	1
026	809-001	SCREW,BTN HD SKT,M3X6 SST	4
027	212-1953-001	BUMPER,ARM,DISPLAY	2
028	212-3284-SSC	KIT,SSC,CONST DISP MACH	1

212-1220-502 ASSY, ARTICULATING ARMS, DISPLAY

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-3202-001	CUP,ARM,DISPLAY HT MACHINED	2
002	212-2132-001	BEARING,BALL.25MM BORE DBL ROW	3
003	212-1330-001	COLLAR,BEARING	2
004	212-2374-001	BASE,DISPLAY,MACHINED	1
005	212-1665-001	SPRING,DISK,050	6
006	212-1502-001	WASHER,TAB	1
007	212-1319-001	WASHER,1.20X2.00X.119 DELRIN	1
008	212-1503-001	NUT,RETAINER,BEARING	1
009	212-2375-001	SHAFT,ARM,DISPLAY MACHINED	2
010	212-1224-001	RING,STOP,DISPLAY	1
011	212-3203-001	CUP,TILT ARM,DISP HT MACHINED	1
012	212-1842-001	TUBE,SPRING,DELIN	1
013	212-1664-001	SPRING,DISPLAY,GRAVITY	1
014	212-1229-001	ARM,TILT,DISPLAY	2
015	212-1325-001	BUSHING,ARM,TILT	2
016	212-1662-001	SHAFT,TILT	1
017	809-016	SCREW,BTN HD SKT,M6X10 SST	2
018	212-1663-001	SPRING,DISK,TILT	4
019	212-1504-001	WASHER,SHIM,TILT	2
020	212-1871-001	CABLE ASSY,VIDEO,LVDS W12	1
021	212-1872-001	CABLE ASSY,INTERFACE,DSPL W13	1
022	212-3209-001	CABLE ASSY,GROUND,W157	1
023	891-027	LUBRICANT,PFPE/PTFE,8981	1
024	807-013	SCREW,CAP HD SKT,M4X8 SST	8
025	212-1226-002	PANEL,TILT ARM,DISPLAY PAINTED	1
026	809-001	SCREW,BTN HD SKT,M3X6 SST	4
027	212-1953-001	BUMPER,ARM,DISPLAY	2
028	212-3284-SSC	KIT,SSC,CONST DISP MACH	1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICAT ON 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) IN BOTTOM.
4. -SXX: SERIES PART NUMBERS ARE MADE FROM 1 EACH OF THE -SXX SERIES PART NUMBERS.
5. * XX IN-LBS * INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE ± 10% OF NOMINAL VALUE, UNLESS OTHERWISE SPECIFIED.
6. ASSEMBLY FIXTURE 995-2120-585 MAY BE USED TO AID WITH ASSEMBLY.
7. BUILD PER 992-2120-001.
8. SEE SH. 21 FOR CABLE LENGTH TABULATION.

REVISION HISTORY

REV	ECN	DATE
E	20090009	01/08/09
F	20090604	04/16/09
G	20090757	05/15/09
H	20091369	07/31/09
J	20091747	09/29/09
K	20091976	10/28/09
L	20100708	05/25/10
M	20101062	07/12/10
N	EN017029ECN	05/09/11
R	EN054873ECN	05/20/14

TABULATION 8

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-1220-541	ASSY.ARTICULATING ARMS.DISPLAY	212-1220-501S	2	ASSY.ARTICULAT ARMS.DISPL SVCE
212-1220-542	ASSY.ARTICULATING ARMS.DISPLAY	212-1220-502S	2	ASSY.ARTICULAT ARMS.DISPL SVCE

SEE SEPARATE PART LIST

QTY PART NUMBER DESCRIPTION MATERIAL/MANUFACTURER ITEM

BILL OF MATERIAL

BY M.DINH DATE 04/20/05 THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE DISCLOSED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF ALCON

DESIGNED BY T.BELL DATE 03/07/08

APPROVED BY M.McCOWEY DATE 03/07/08

FORMED REVISION 2/23/2007

POMLINK MODEL ATTRIBUTES NAME: 212-1220-501.PDOC VERSION: R.1

DESCRIPTION ASSY.ARTICULATING ARMS.DISPLAY

SIZE B DRAWING NUMBER 212-1220-XXX REV R

SCALE: 1/10 SHEET 1 OF 31

-501 SHOWN

STEP 1

1. START BEARING RETAINER BY HAND TO PREVENT STRIPPING THREADS.
2. SCREW DOWN TO HARD STOP AND TIGHTEN FIRMLY WITH P/N 995-2120-177.

212-1330-001

212-2132-001

212-3202-001
SUBSTITUTE PART 212-3202-003

STEP 1

SIZE B DRAWING NUMBER 212-1220-XXX REV R

SCALE: 1/10 SHEET 2 OF 31

STEP 2

ORIENTATION OF SPRING WASHERS IS CRITICAL. ASSEMBLE WITH INNER RINGS FACING DOWN.

212-1665-001

212-2374-001
SUBSTITUTE PART 212-2374-003

STEP 2

SIZE B DRAWING NUMBER 212-1220-XXX REV R

SCALE: 1/10 SHEET 3 OF 31

STEP 3

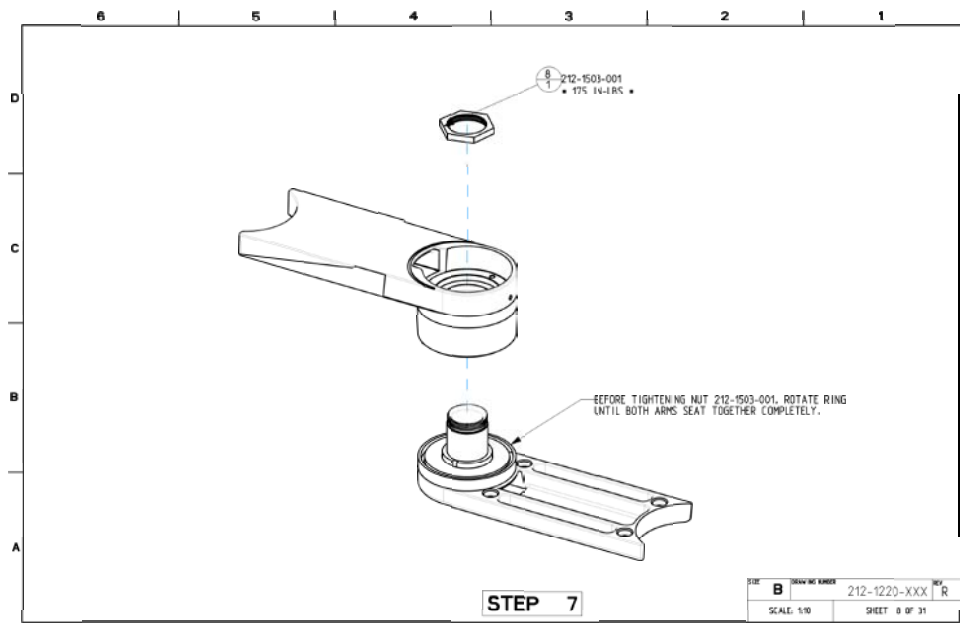
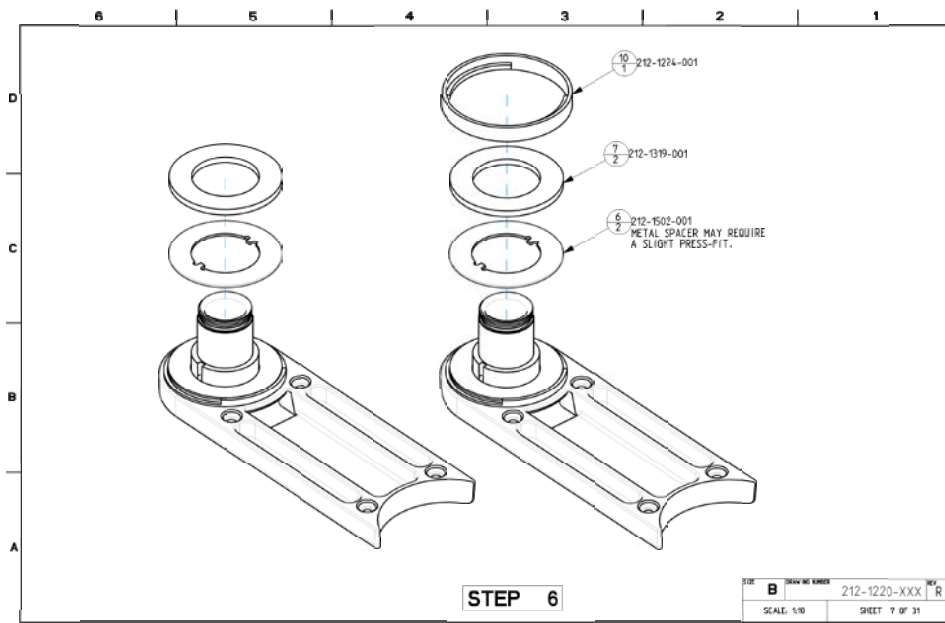
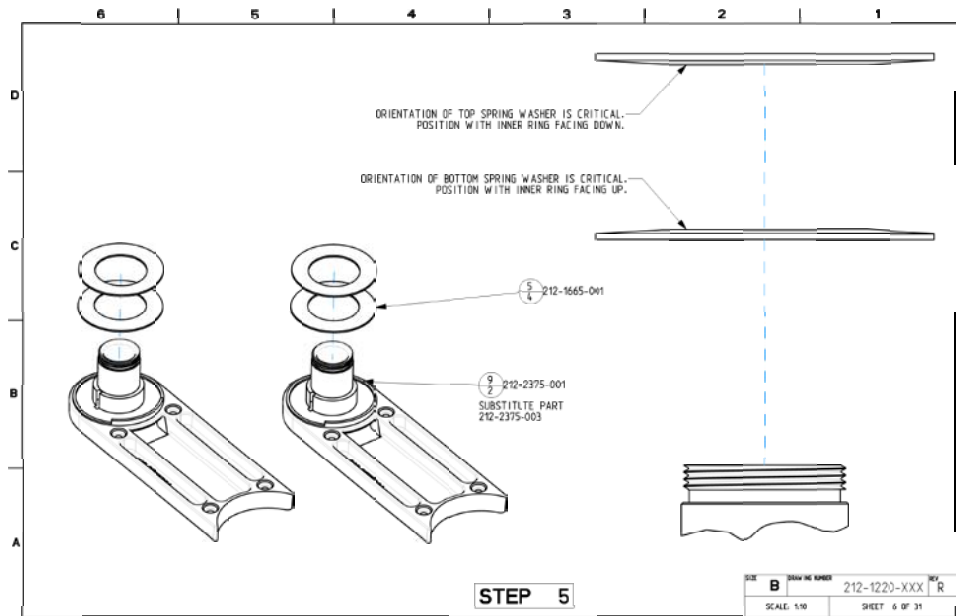
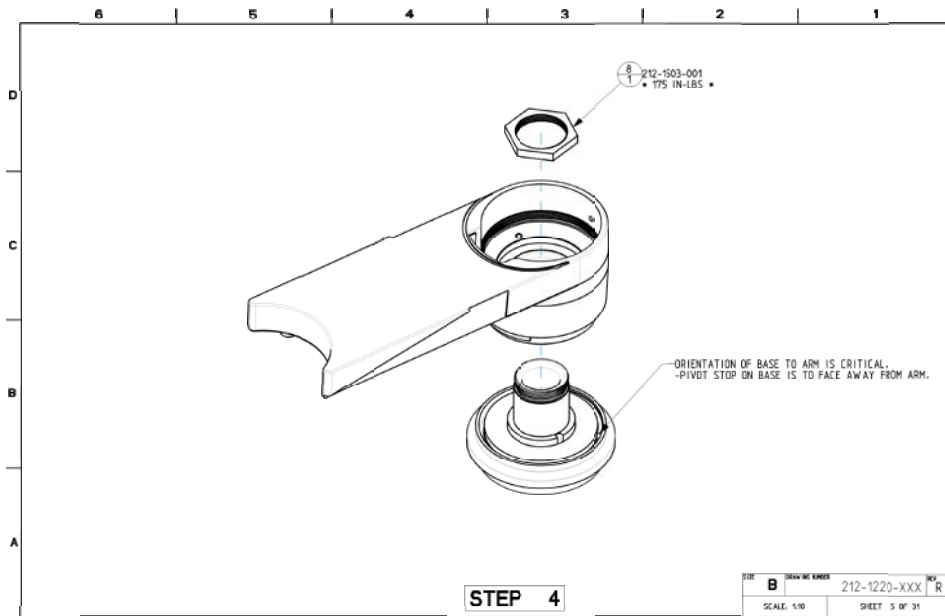
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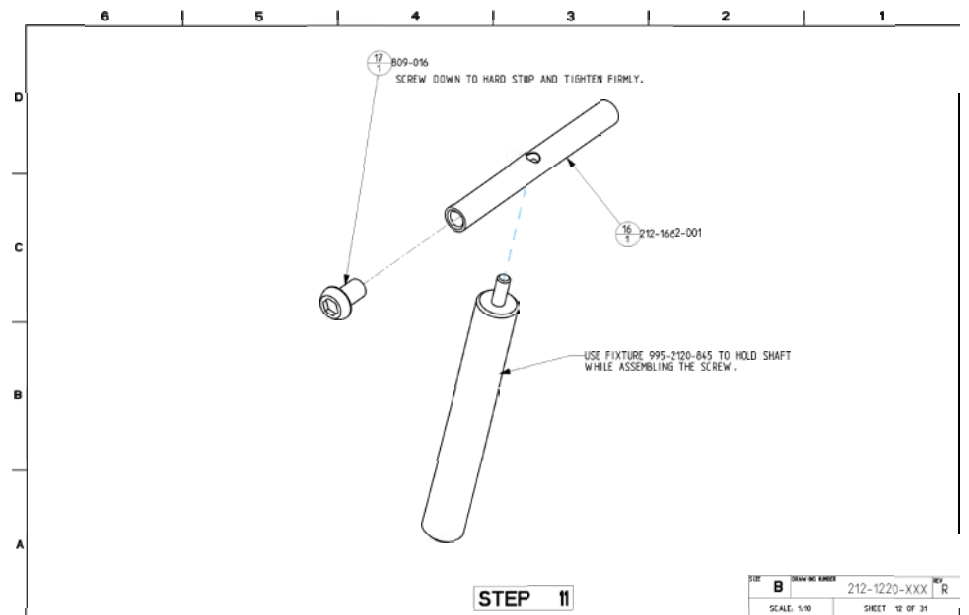
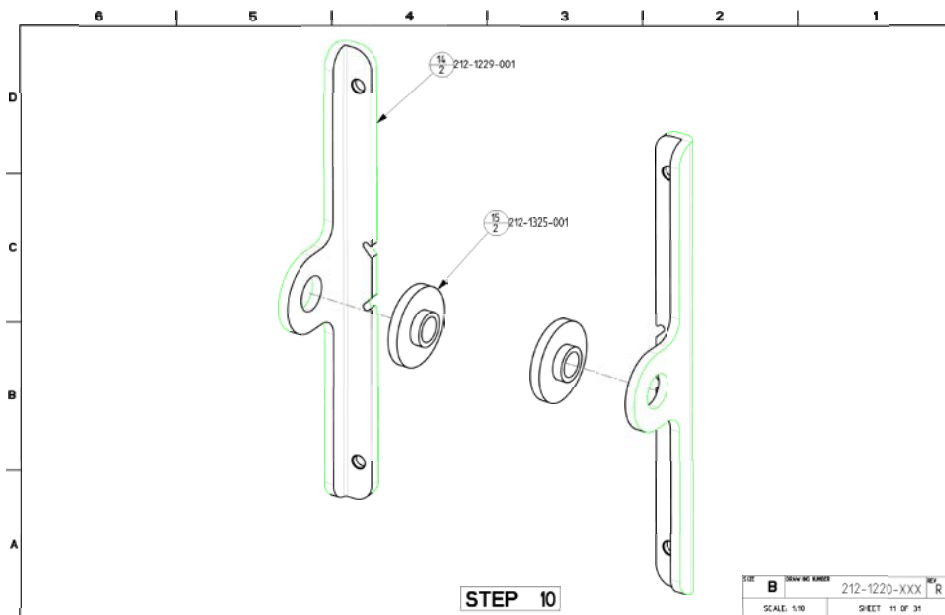
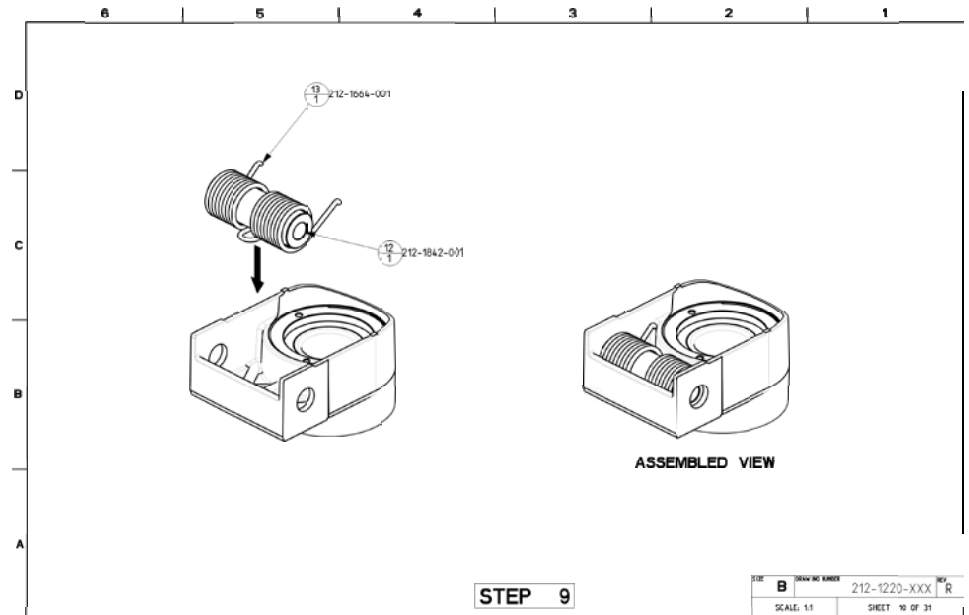
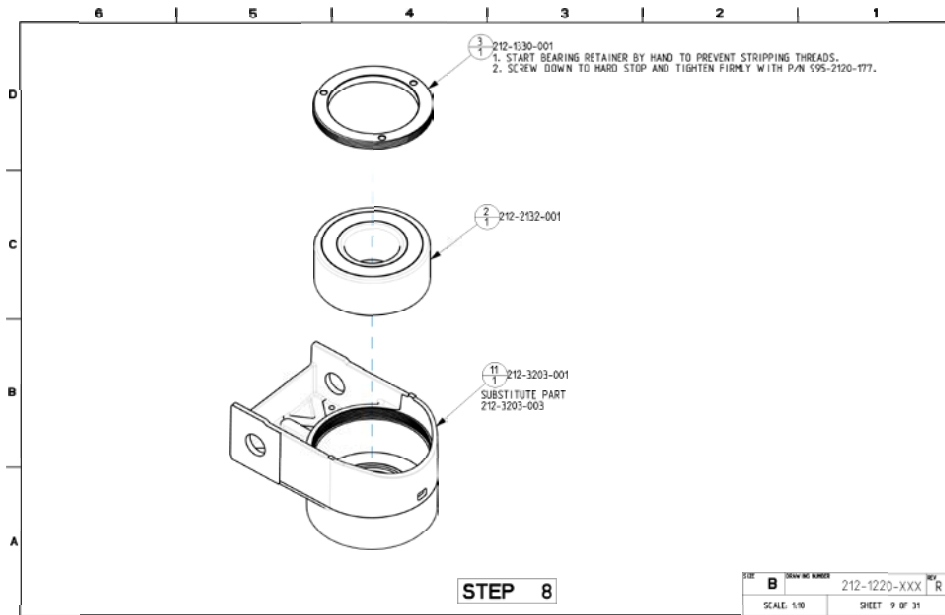
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METAL SPACER MAY REQUIRE A SLIGHT PRESS-FIT.

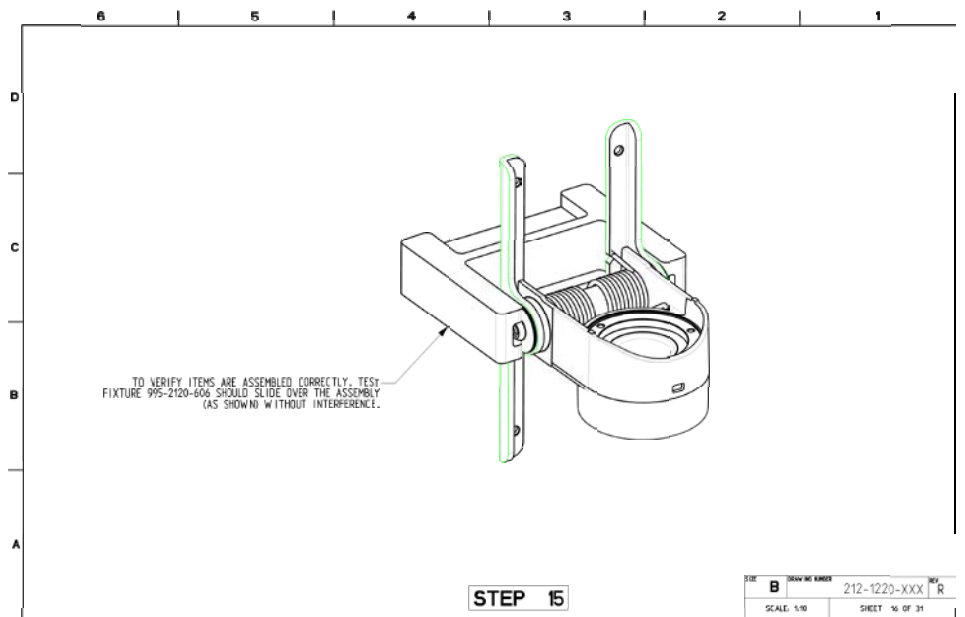
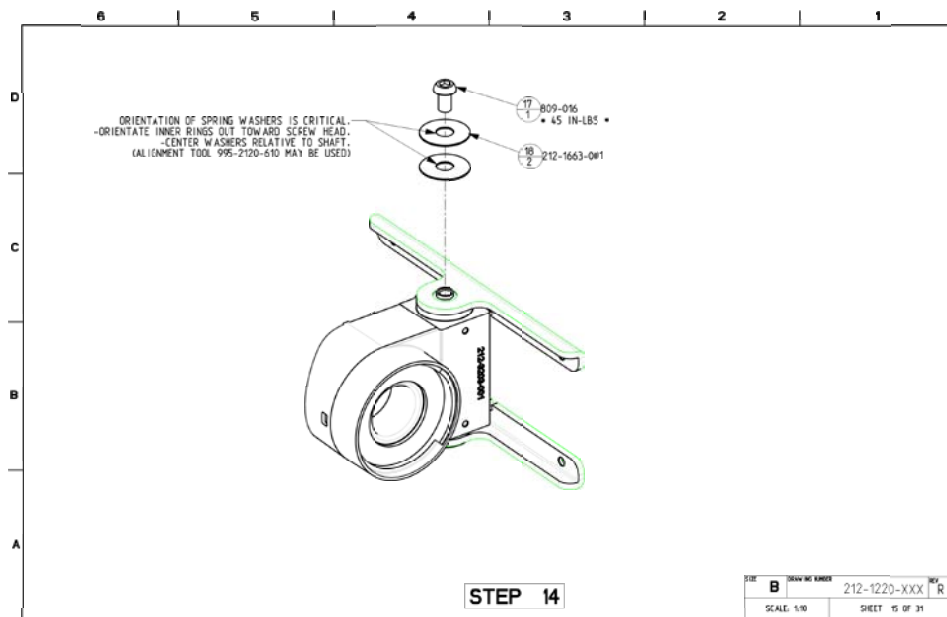
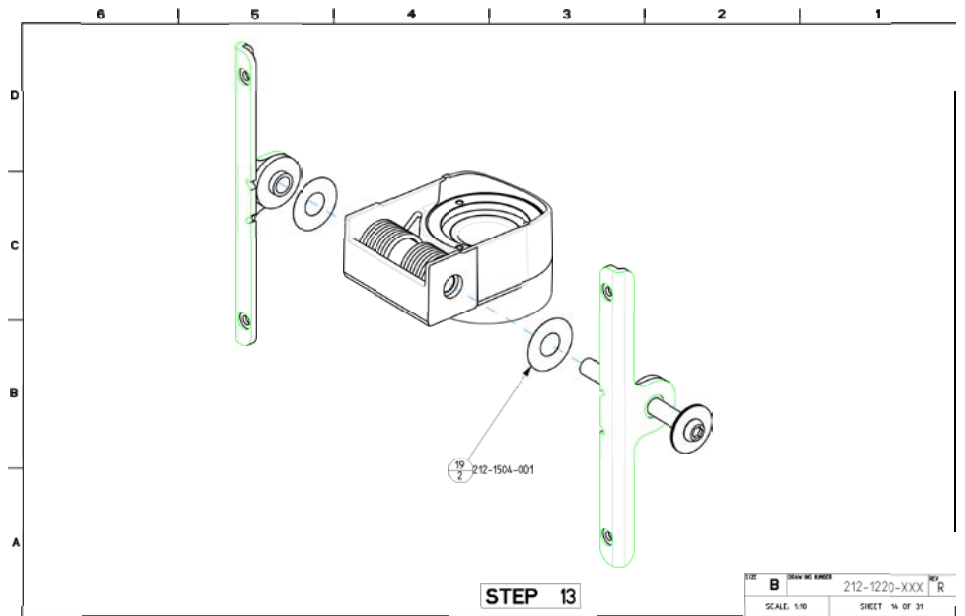
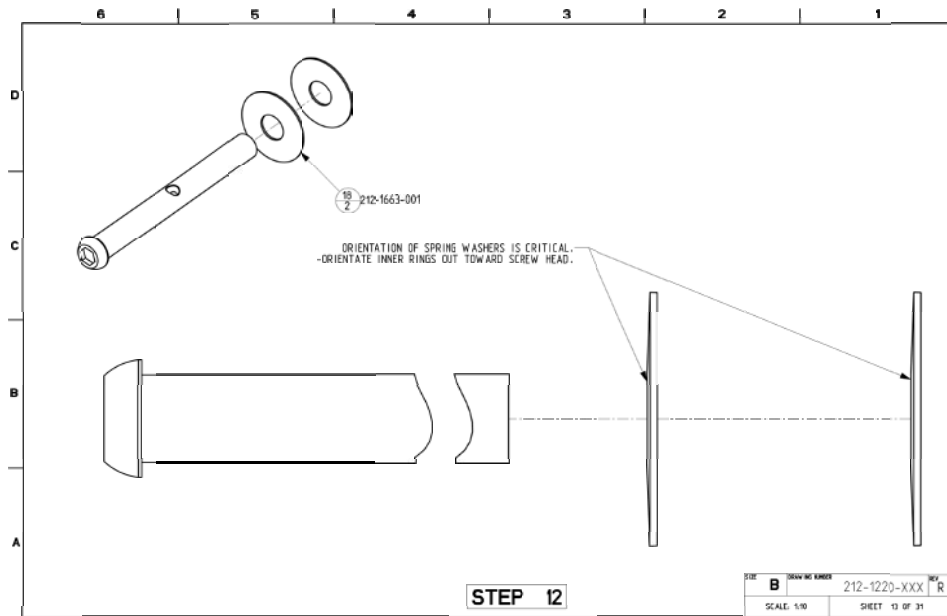
STEP 3

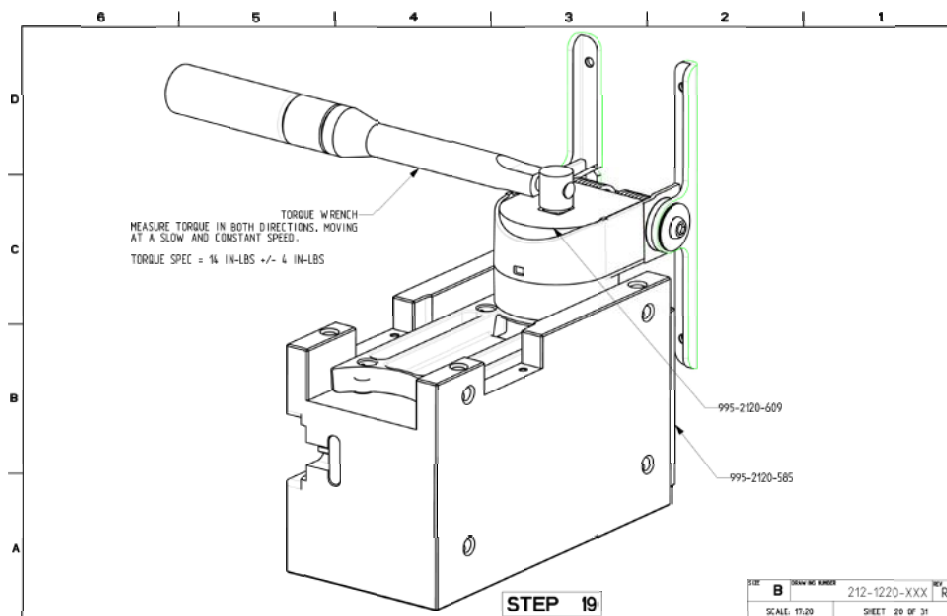
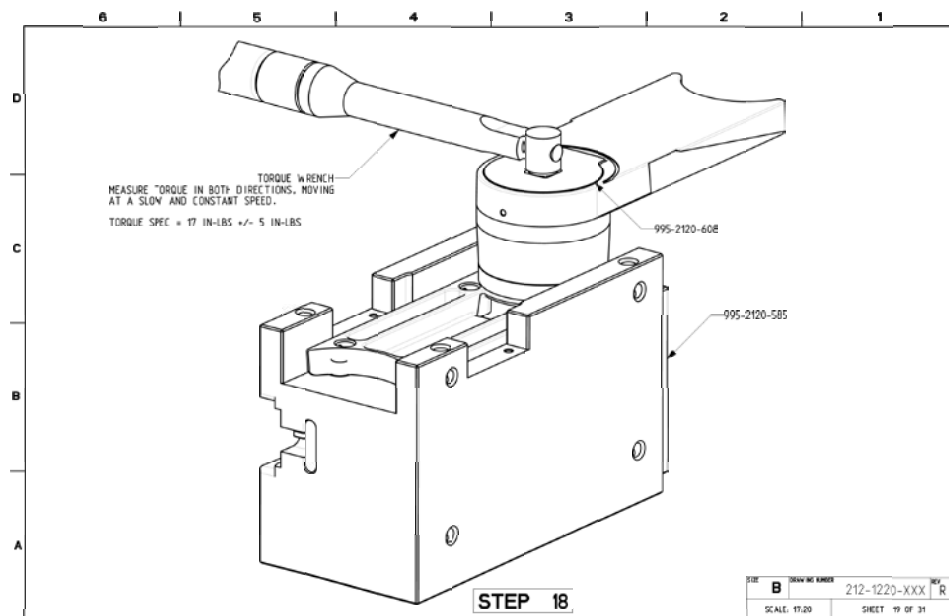
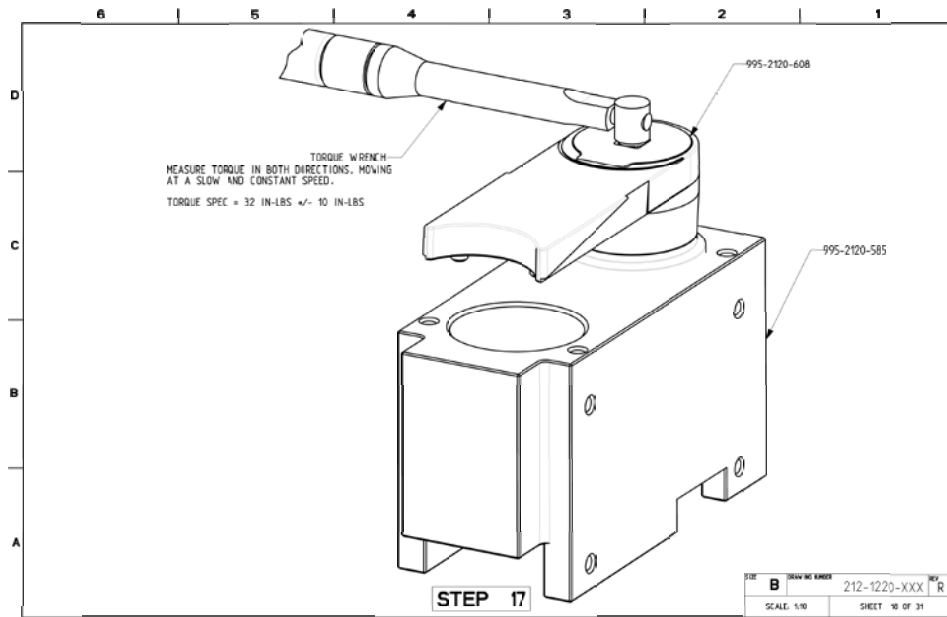
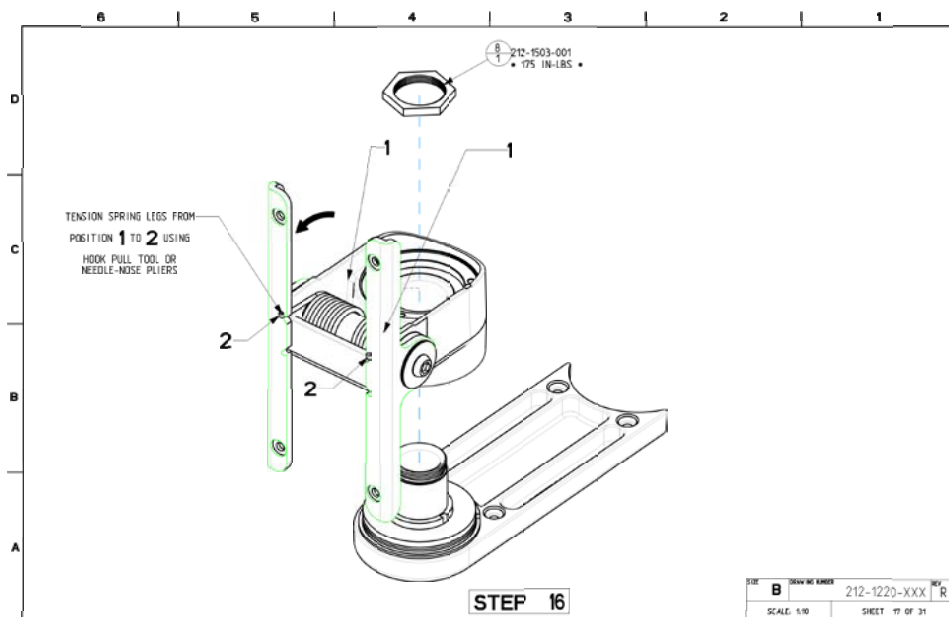
SIZE B DRAWING NUMBER 212-1220-XXX REV R

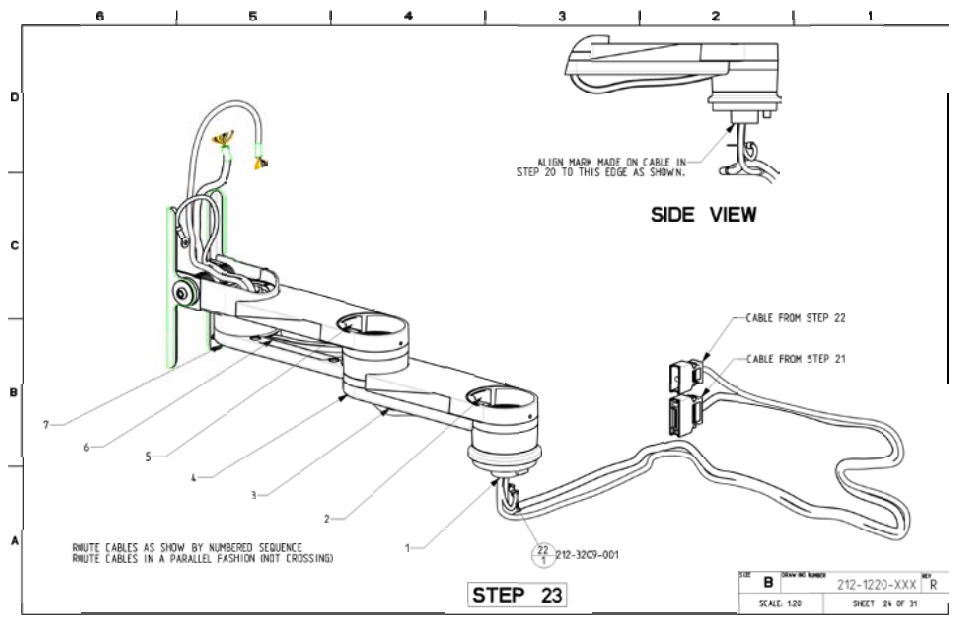
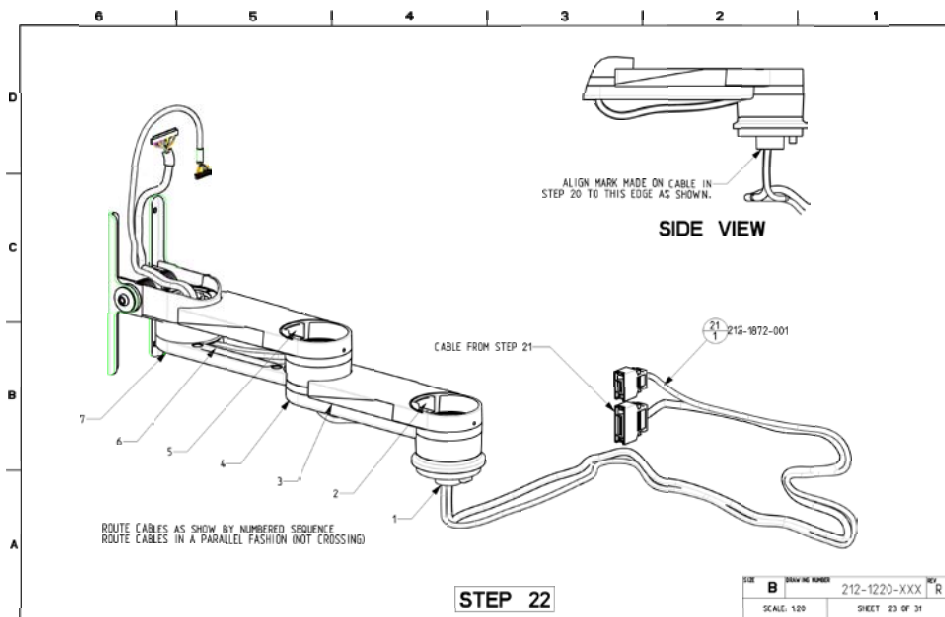
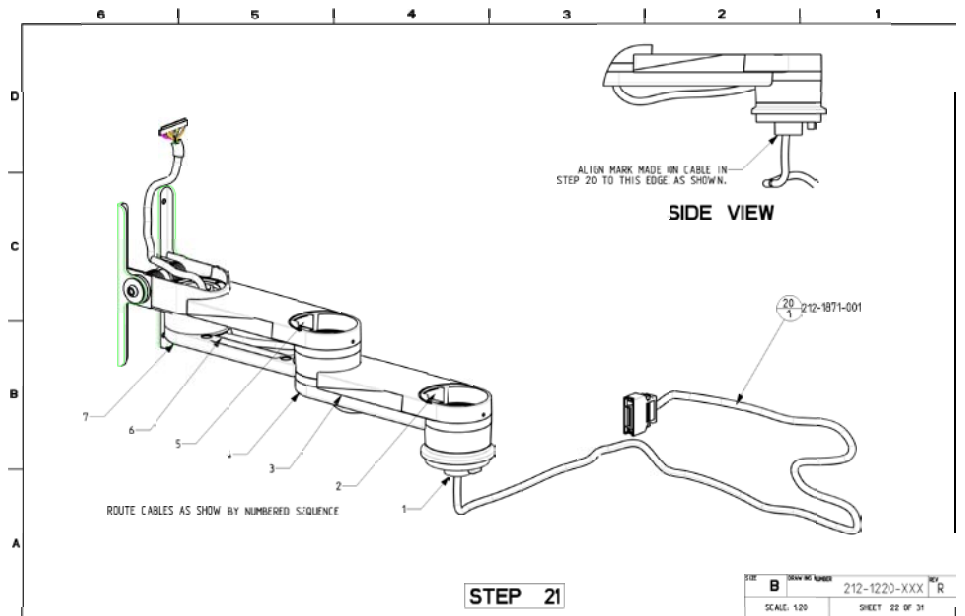
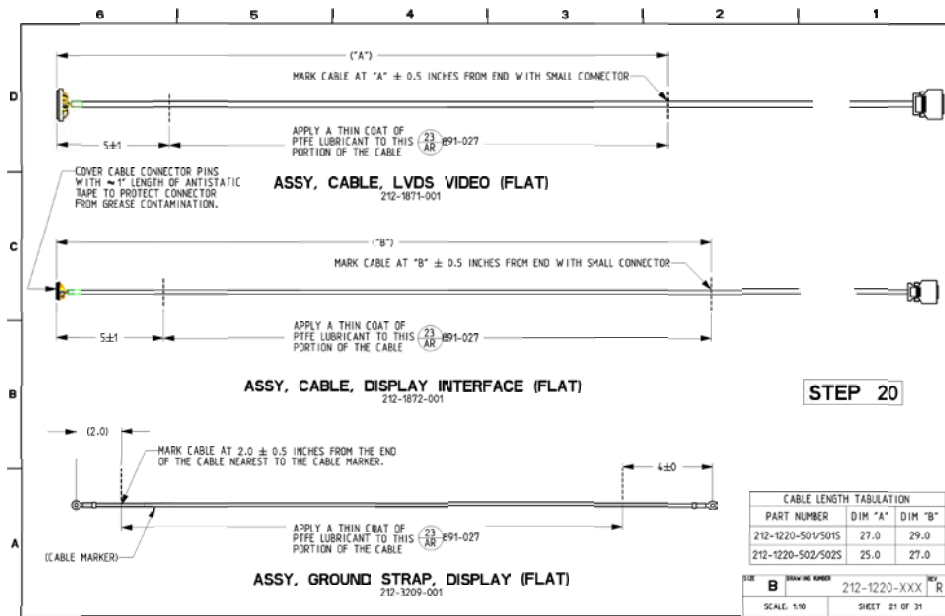
SCALE: 1/10 SHEET 4 OF 31

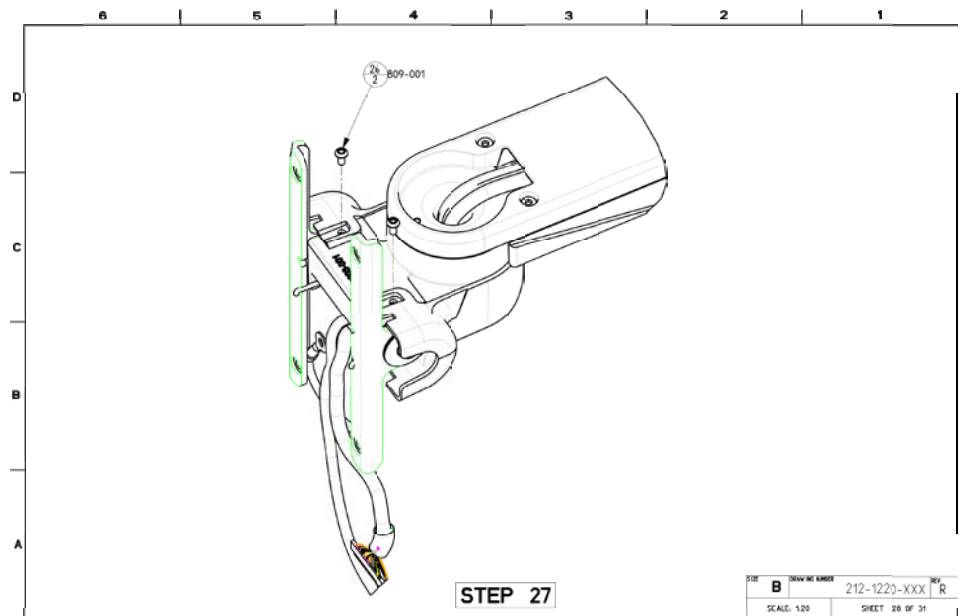
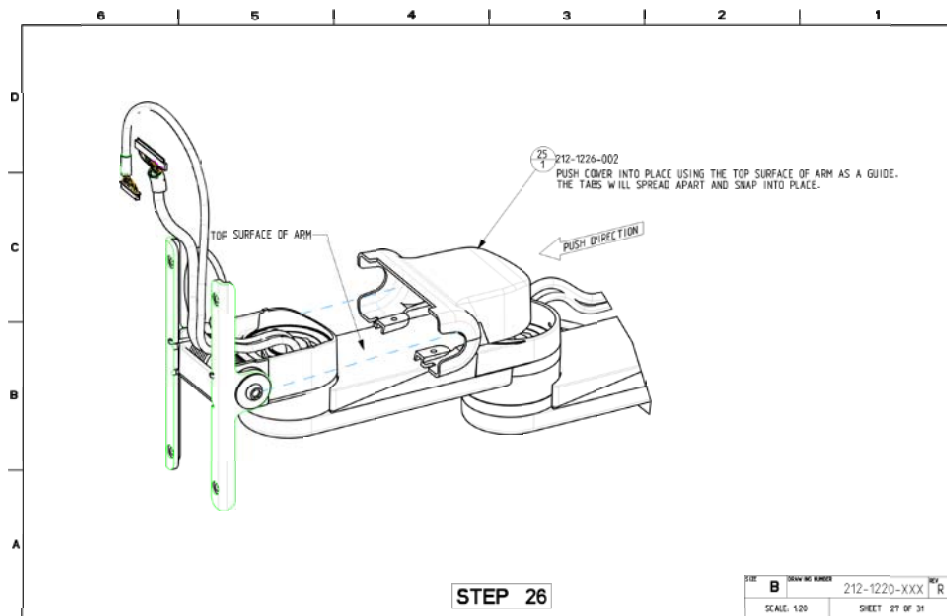
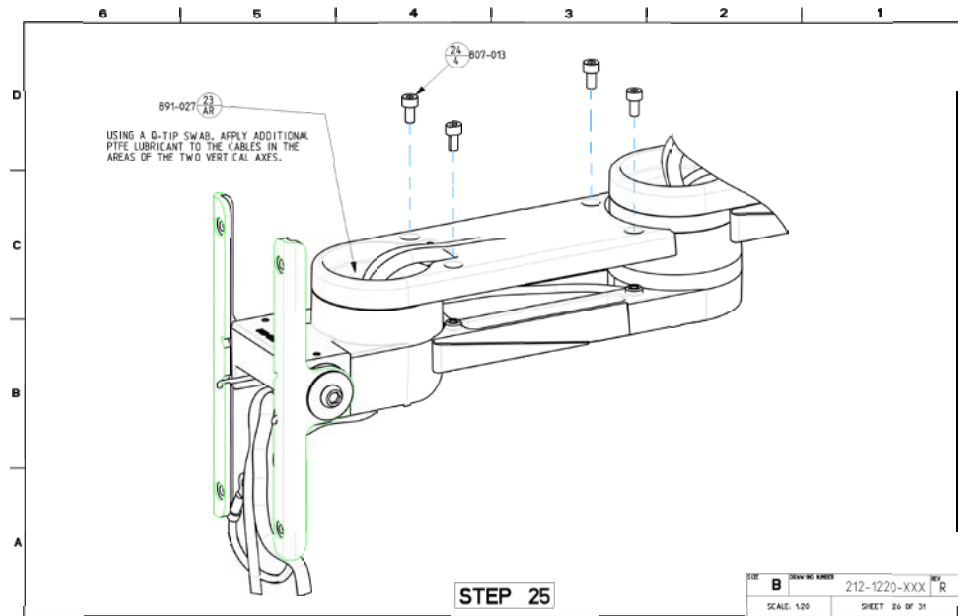
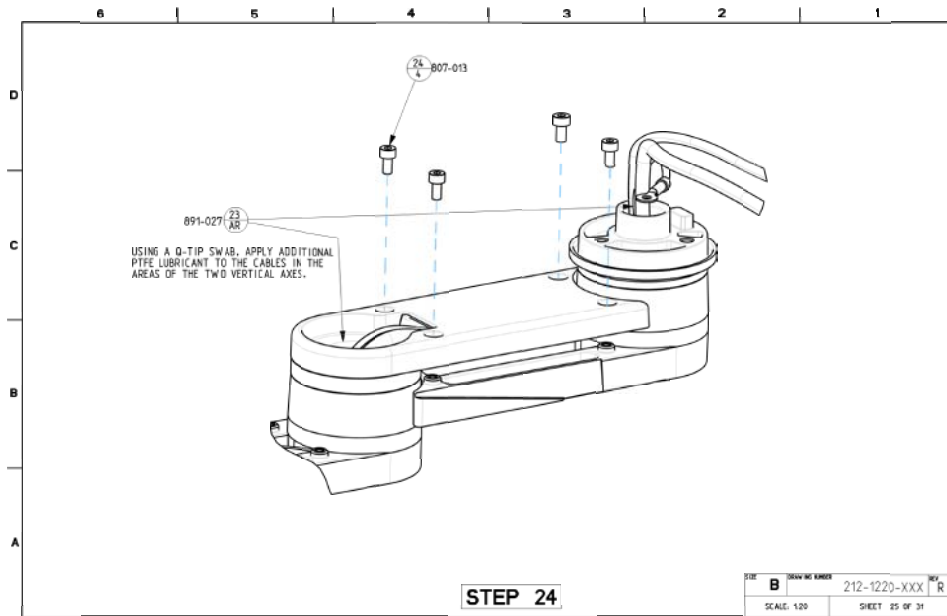


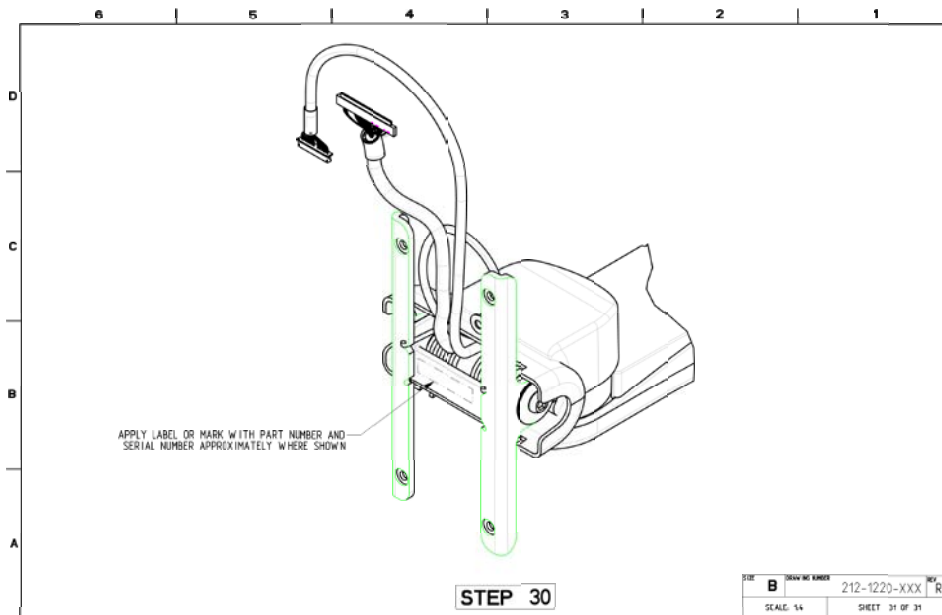
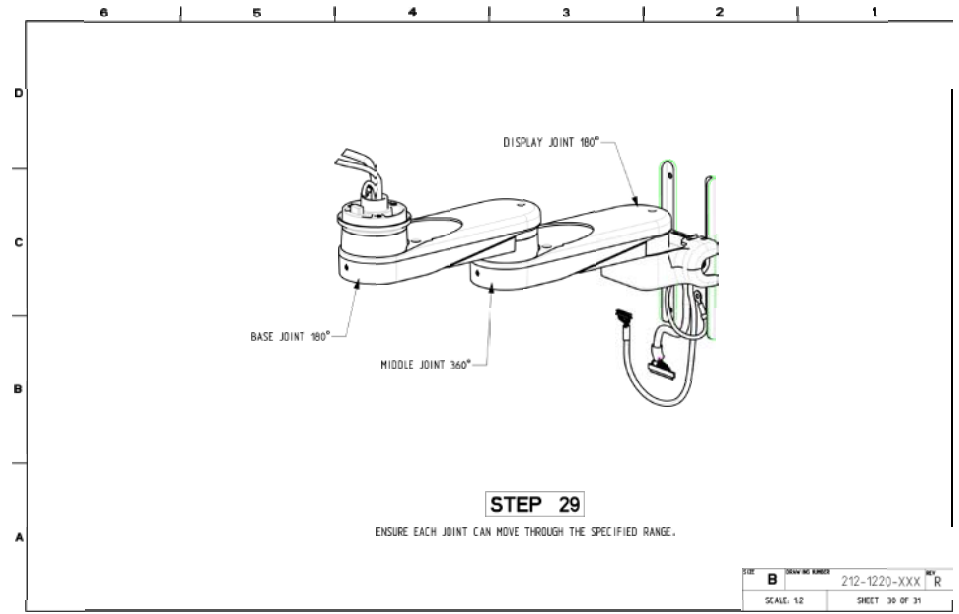
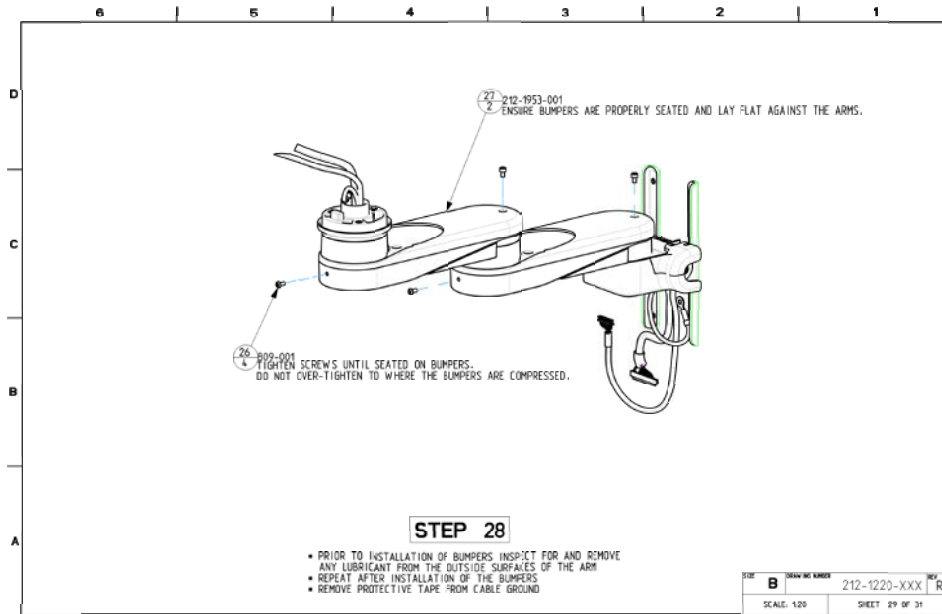












212-1010-502 ASSY, MODULE, HOST

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1593-001	CHASSIS ASSY,MODULE,HOST	1
004	210-2513-005	PCBA,CPU,FLEX-ATX PM 1GB	1
005	809-002	SCREW,BTN HD SKT,M3X8 SST	6
006	212-1203-501	ASSY,PCB,DC-DC CONVERTOR	1
007	809-006	SCREW,BTN HD SKT,M4X8 SST	43
008	212-2023-001	BRACKET,DISPLAY,HOST PCBA	1
009	212-1796-551	ASSY,PCB,HOST DISPLAY	1
010	807-001	SCREW,CAP HD SKT,M3X5 SST	17
011	807-148	SCREW,CAP HD SKT,M2.5X6 SST	4
013	212-2828-001	PANEL,PCB,REAR HOST	1
014	058-239	BRACKET,COMPUTER CARD,BLANK	2
015	212-1594-001	PLATFORM,MOUNTING,HOST	1
016	212-1198-001	PLATFORM,BRACKET,SPRT HOST MOD	1
017	801-105	WASHER,FLAT,M4 SST W/BLK OXD	9
018	212-1743-001	PLATE,MOUNTING,HOST DVD	1
019	276-393	DRIVE,DVD-R/W,ATAPI BLK BEZEL	1
020	811-111	SCREW,FLAT HD SKT,M3X5 SST	7
021	212-1199-001	BRACKET,MOUNTING,HOST MODULE	1
022	276-435	DRIVE,HD,2.5 IN SATA 320GB	1
023	212-2401-001	PLATE,COVER,HARD DISK CONN	1
024	212-2304-001	PCB ASSY,VIDEO OVERLAY,PCI	1
025	212-1849-001	HOUSING,FILTER,HOST AIR	1
026	212-1848-001	FILTER,AIR,HOST	1
030	212-1595-001	COVER,HOST	1
031	212-1798-001	PLATE,FAN INTAKE,HOST	1
032	212-1799-001	PLATE,MOUNTING,FAN HOST	1
033	212-2893-001	CABLE ASSY,HOST,FAN W39	1
034	809-045	SCREW,BTN HD SKT,M4X25 SST	3
035	788-094	SPACER,.166X.375X.75LG,ALUM	3
036	212-1805-001	STANDOFF,HEX,TOP SKIN HOST	1
037	892-042	ADHESIVE,THREADLOCKER,242 BLUE	AR

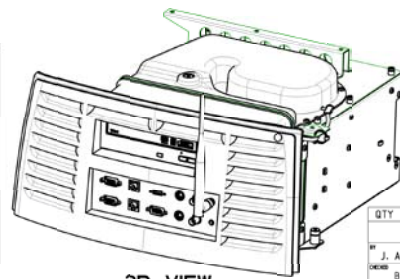
ITEM #	PART NUMBER	DESCRIPTION	QTY
039	212-2009-001	AIR DUCT,MODULE,HOST	1
040	212-2951-001	BRACKET,MOUNTING,REAR SKIN RT	1
041	212-1802-001	BRACKET,MOUNTING,REAR SKIN LT	1
042	212-2043-501	ASSY,PANEL,REAR UPPER TABLETOP	1
043	212-1036-501	ASSY,PANEL,EXPANSION	1
044	212-2387-001	CABLE ASSY,FRONT PANEL USB,W66	1
045	212-2381-001	CABLE ASSY,ATX POWER,W58	1
046	212-2385-001	CABLE ASSY,IDE SIGNAL,DVD W64	1
047	212-2388-001	CABLE ASSY,LVDS SIGNAL,W67	1
048	022-183	CABLE,SATA SIGNAL,.3M	2
049	212-2391-001	CABLE ASSY,SERIAL,EXT W70	1
051	212-2389-001	CABLE ASSY,PWR FRONT PANEL W68	1
052	212-2384-001	CABLE ASSY,DVD POWER,W63	1
053	212-2395-001	CABLE ASSY,AUDIO EXT W75/W76	2
054	212-2398-001	CABLE ASSY,WI-FI ANT,W79	1
055	212-2390-001	CABLE ASSY,SERIAL,IO EXT W69	1
056	212-3084-001	CABLE ASSY,VGA,EXT W72	1
057	212-2394-001	CABLE ASSY,USB,PORT W74/W165	1
058	212-2393-001	CABLE ASSY,ETHRNT EXTN,W73	1
059	212-2396-001	CABLE ASSY,VOM SIGNAL,EXT W77	1
060	212-2399-001	CABLE ASSY,EXPNSN PWR SHNL W80	1
061	212-2397-001	CABLE ASSY,S-VIDEO,IN/OUT W78	1
062	212-2382-001	CABLE ASSY,SATA PWR,W59/W60	2
063	212-2391-002	CABLE ASSY,SERIAL,EXT W71	1
067	212-1560-001	CABLE ASSY,ETHERNET W17	1
069	395-1433-001	SCREW,M4X8,FL HD HEX CUSTOM	2
070	212-2977-001	GASKET,HEX,STANDOFF	1
071	027-003	CABLE TIE,.625X3.50L,NYLON	2

AR = As Required

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. -SXXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -SXX SERIES P/N.
5. *XX IN LBS* INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE $\pm 10\%$ OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
6. BUILD PER 992-2120-001 AND TEST PER 907-2120-006.

REVISION HISTORY		
REV	ECN	DATE
Y	20101902	11/05/10
AA	20102060	2/04/10
AB	20102198	11/21/11
AC	CN05475ECN	13/09/11
AD	CN05426ECN	04/28/11
AE	CN025783ECN	01/09/12
AF	CN030864ECN	06/07/12
AG	CN041972ECN	05/29/13
AH	CN053399ECN	02/28/14
AJ	CN056316ECN	07/03/14
AK	CN056054ECN	09/23/14



3D VIEW
212-1010-502 SHOWN

TABULATION					
PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION	
212-1010-501	ASSY_MODULE_HOST	212-1010-501FS	0BS	ASSY_MODULE_HOST SERVICE	
212-1010-502	ASSY_MODULE_HOST	212-1010-502FS	AK	ASSY_MODULE_HOST SERVICE	
212-1010-503	ASSY_MODULE_HOST ALJ	212-1010-503FS	AK	ASSY_MODULE_HOST ALJ SERVICE	

SEE SEPARATE PARTS LIST

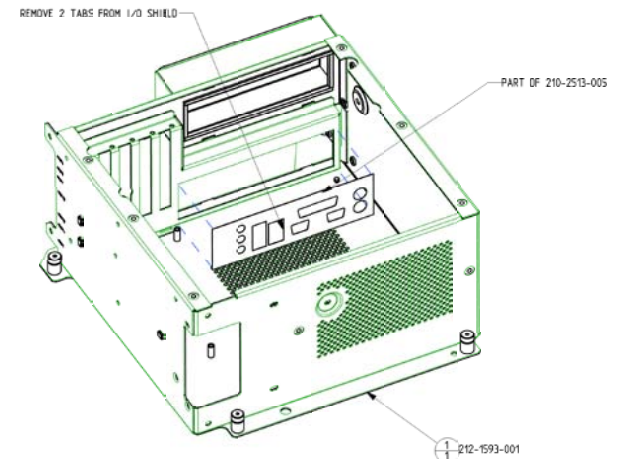
QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	J. ATHERLEY	DATE	03/05/08	
DESIGNED	B. LEE	DATE	03/06/08	
APPROVED	J. FOSTER	DATE	03/07/08	
FORM REVISED		DATE	2/23/2007	
POMLINK MODEL ATTRIBUTES NAME: 212-1010-XXX VERSION: AK.2				



DESCRIPTION
ASSY_MODULE_HOST

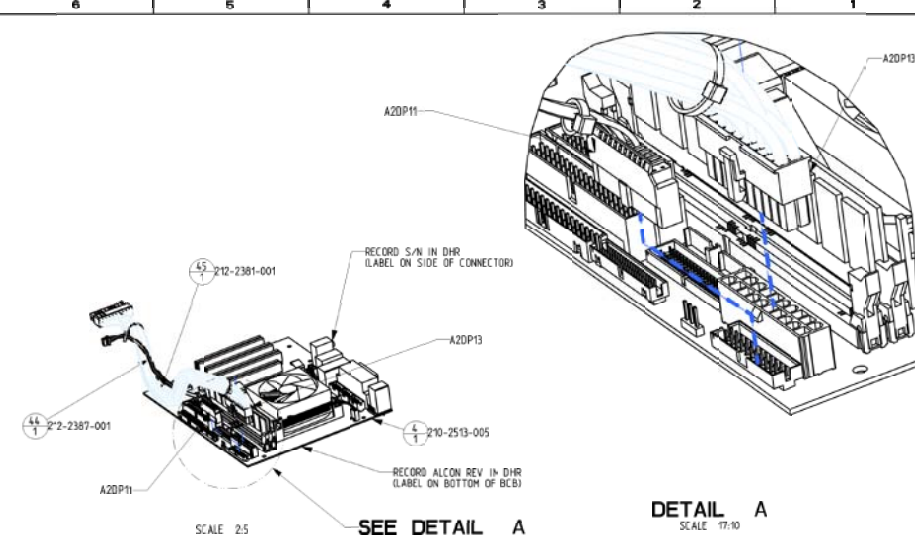
SIZE: B DRAWING NUMBER: 212-1010-XXX REV: AK

SCALE: 1:1 SHEET 1 OF 70



STEP 1
SNAP I/O SHIELD INTO PLACE

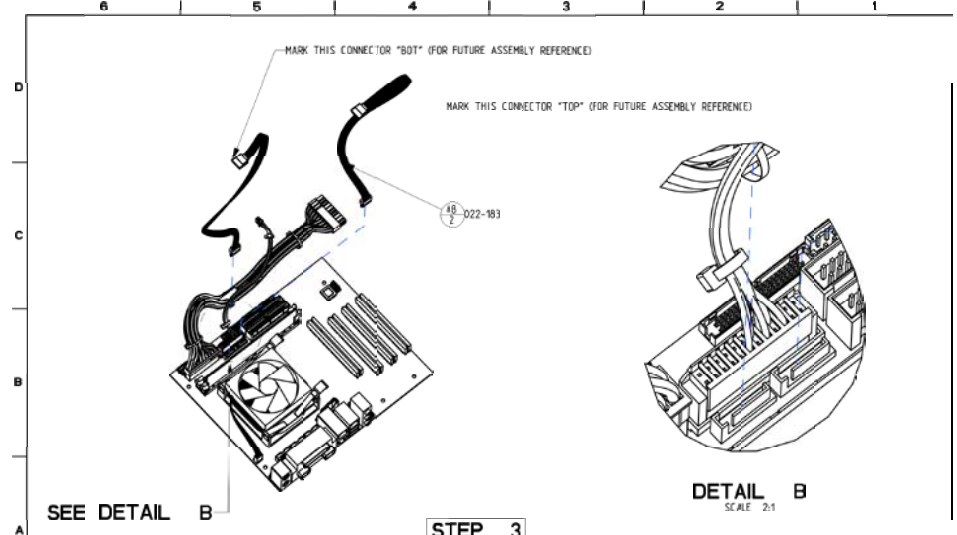
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SCALE: 1:1					SHEET 2 OF 70



DETAIL A
SCALE: 17:10

STEP 2

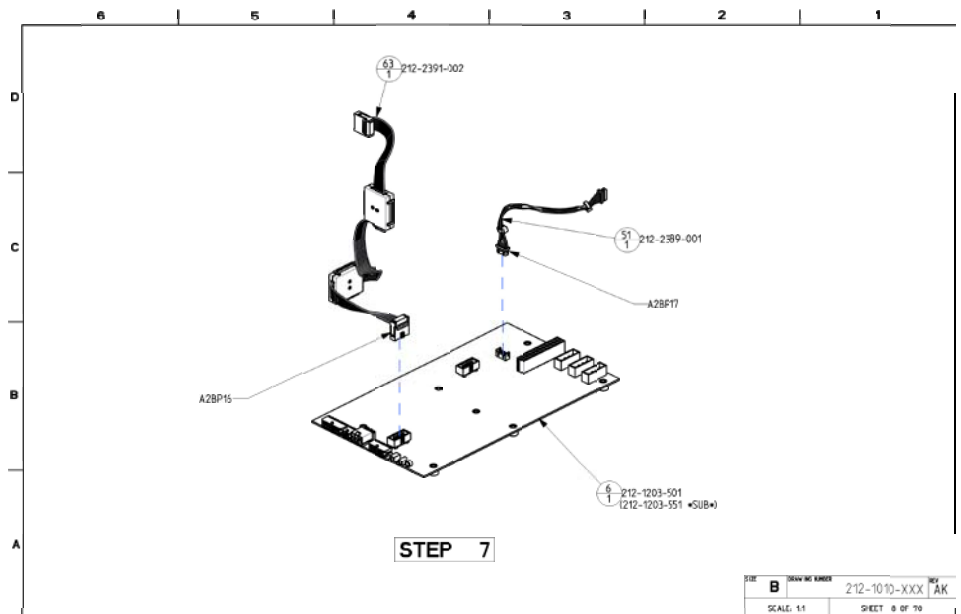
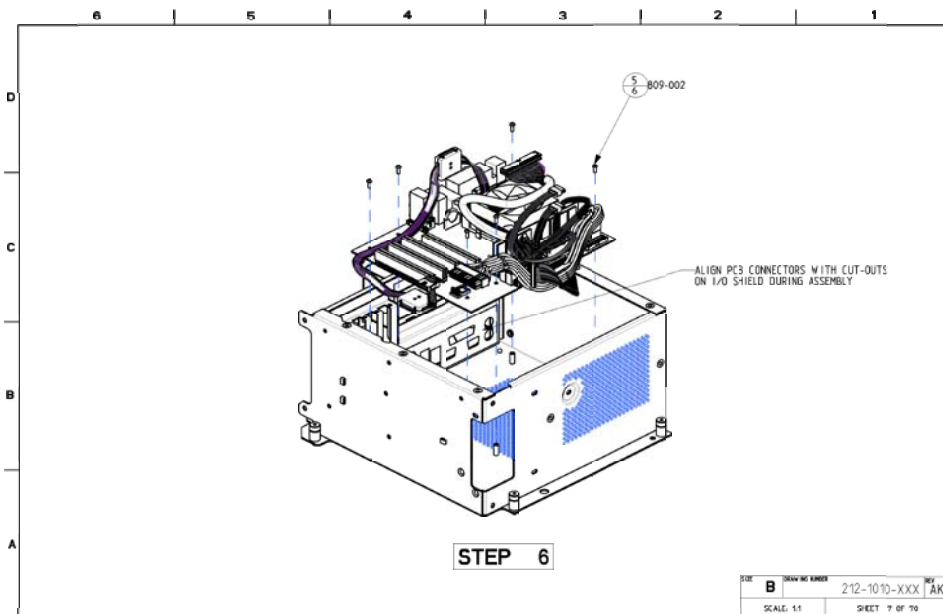
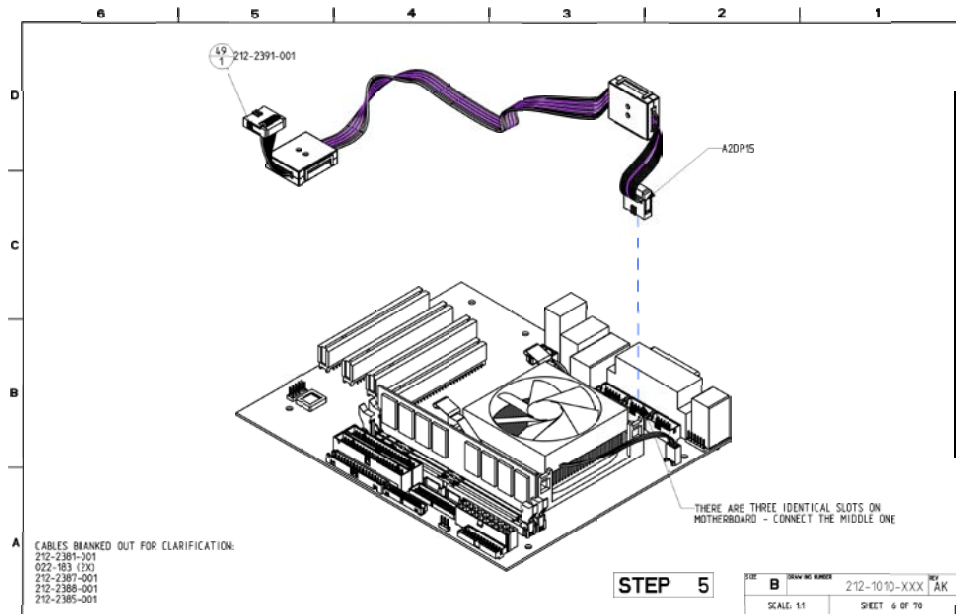
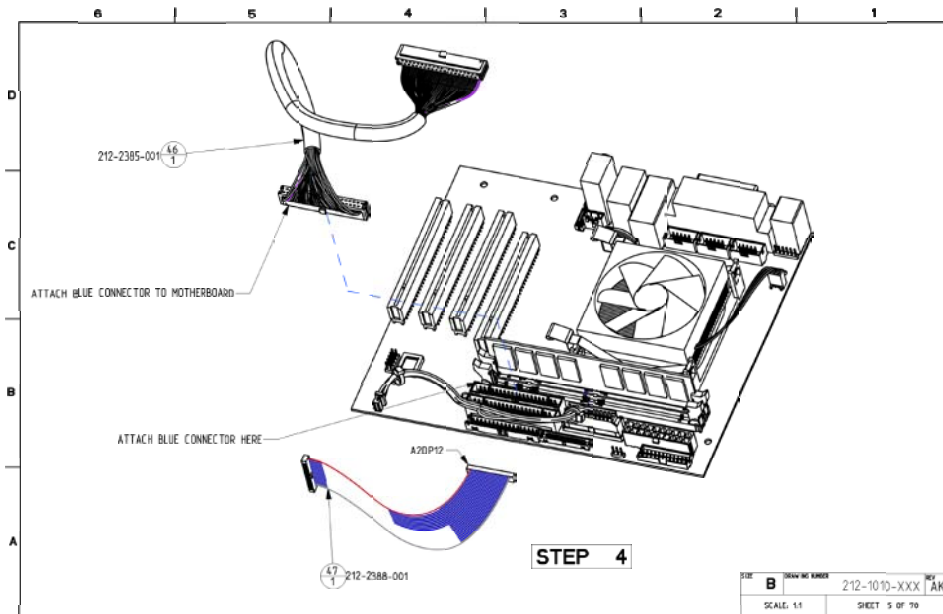
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SCALE: 1:1					SHEET 3 OF 70

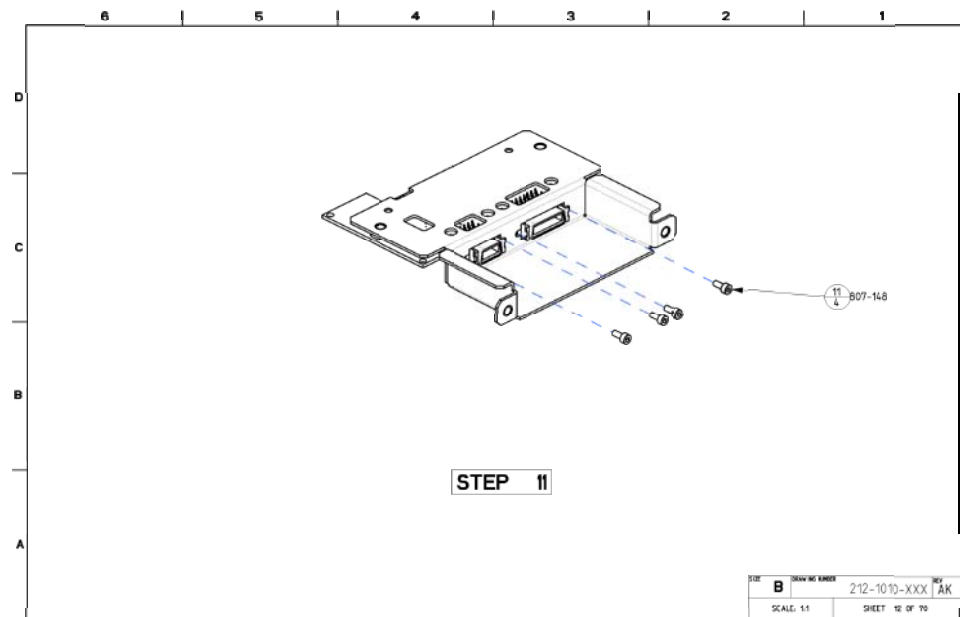
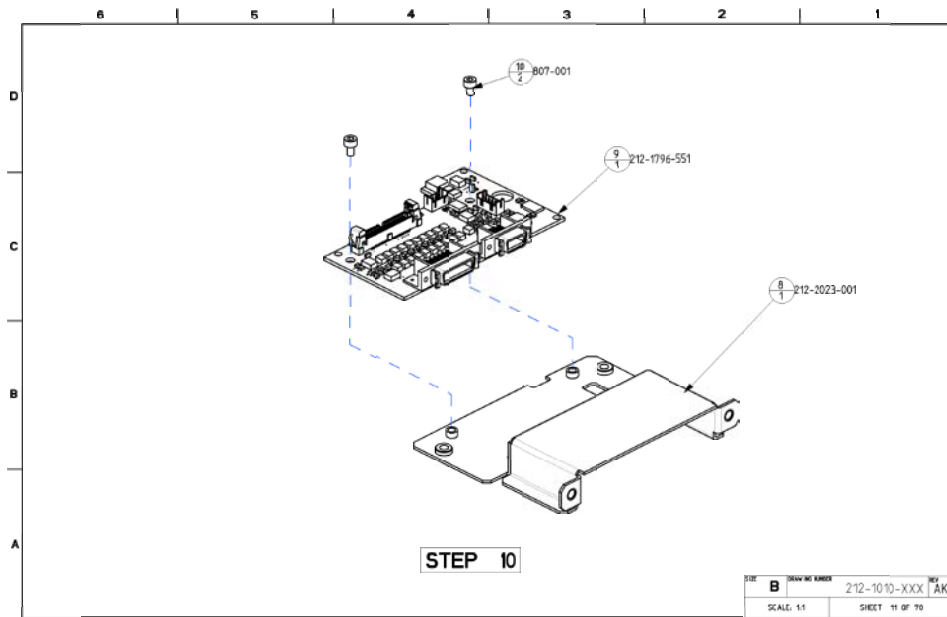
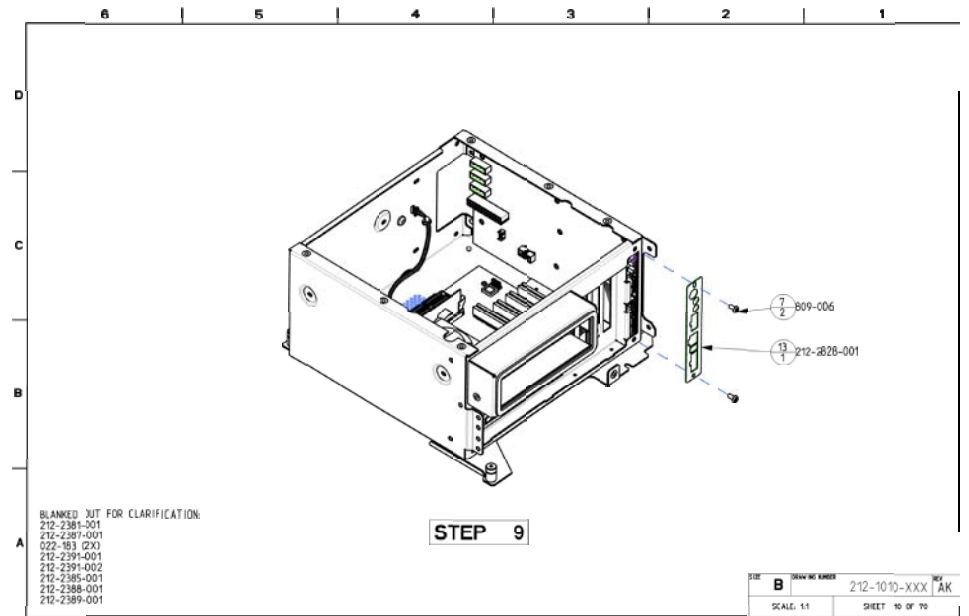
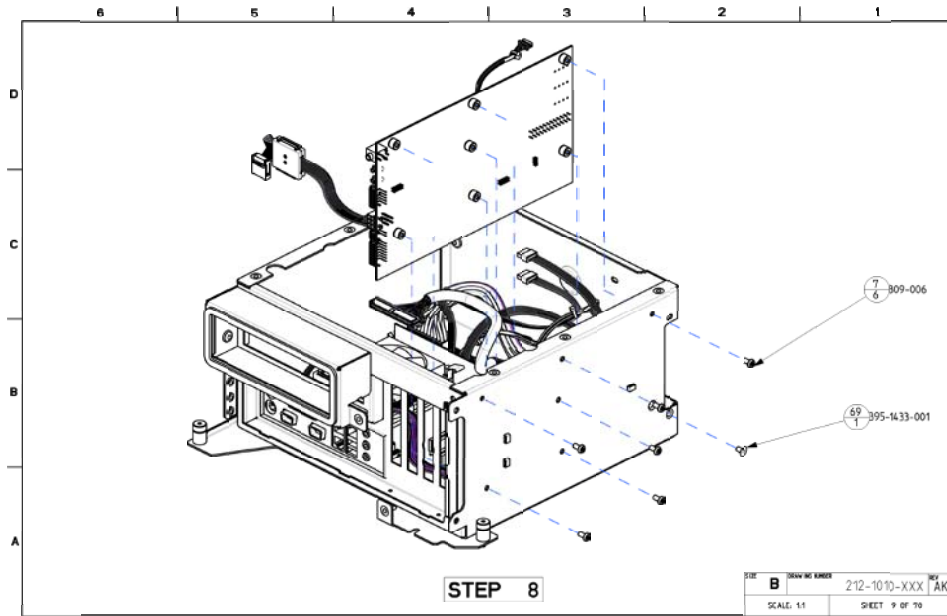


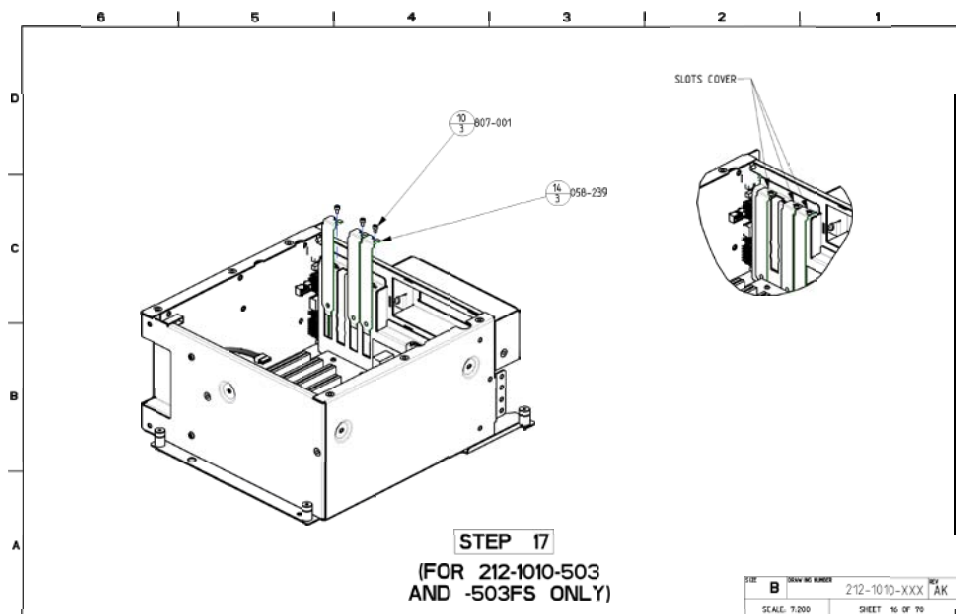
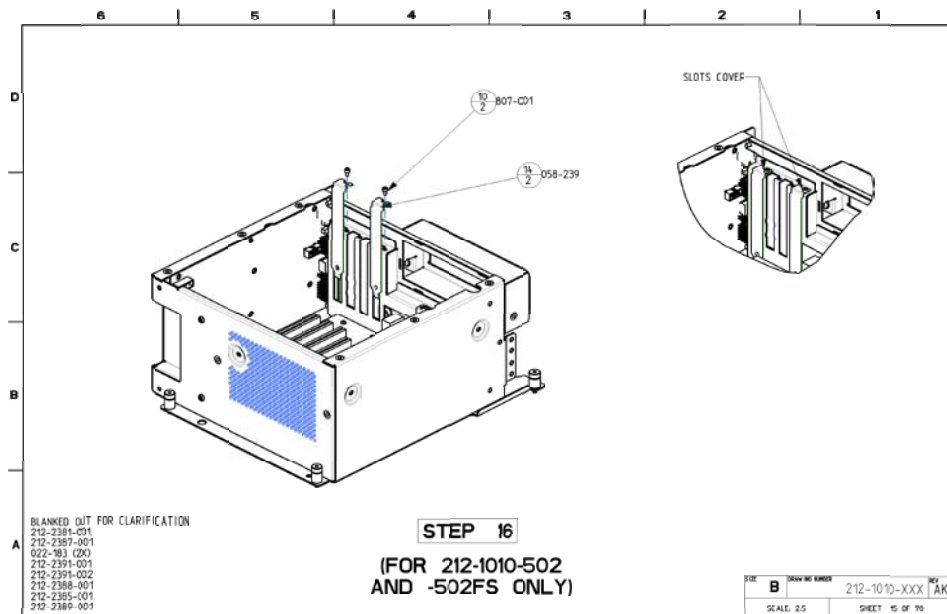
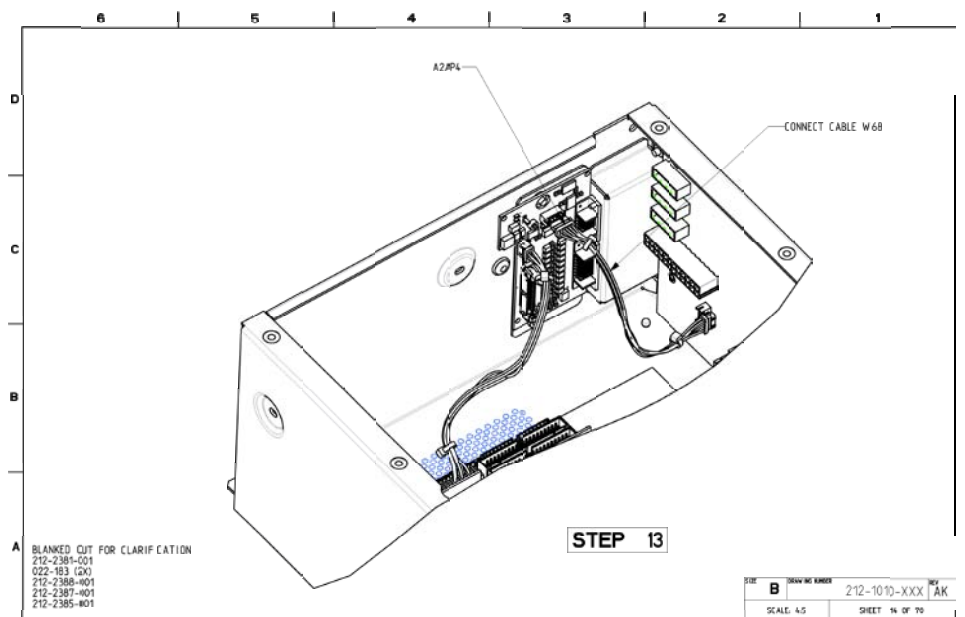
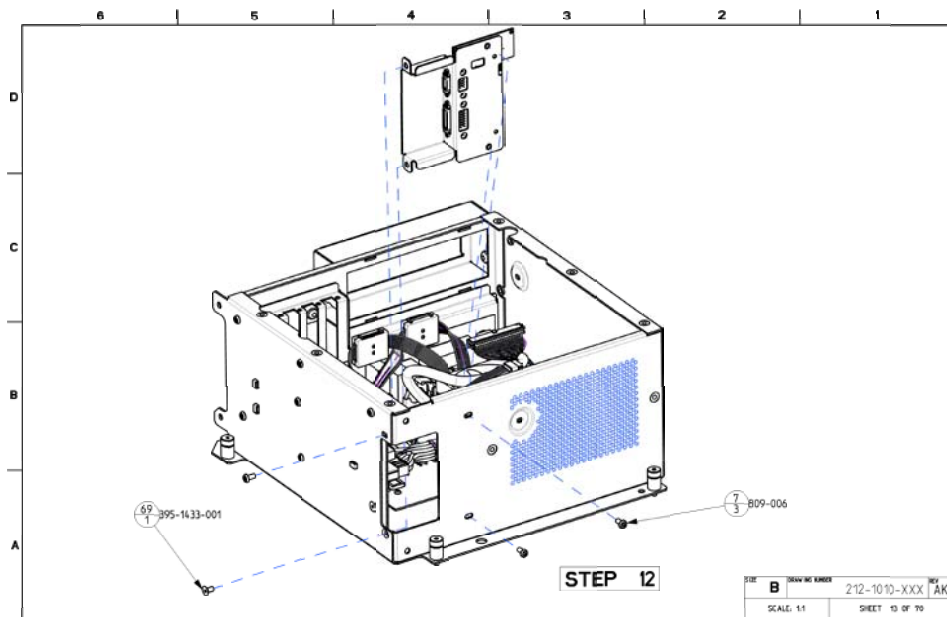
SEE DETAIL B

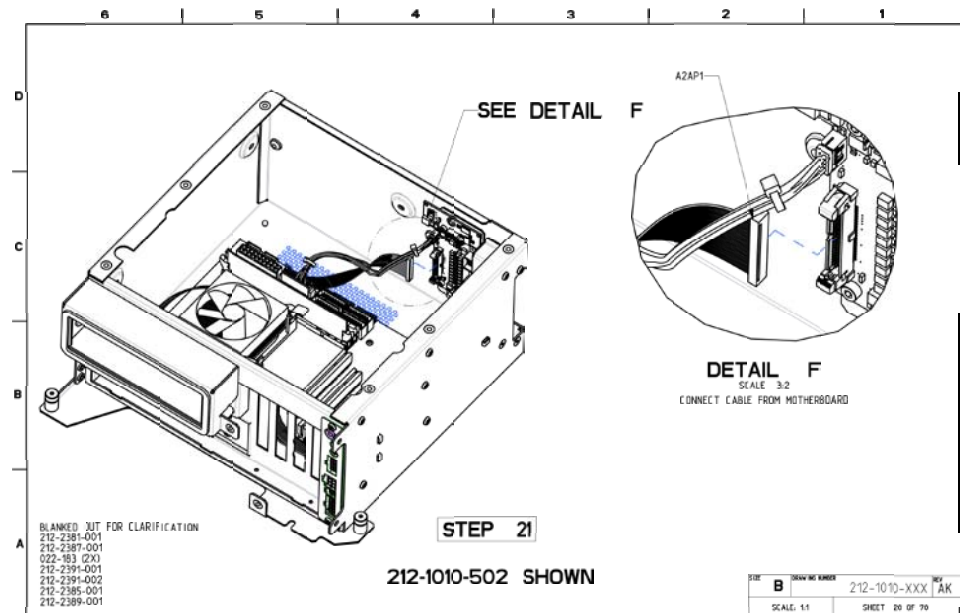
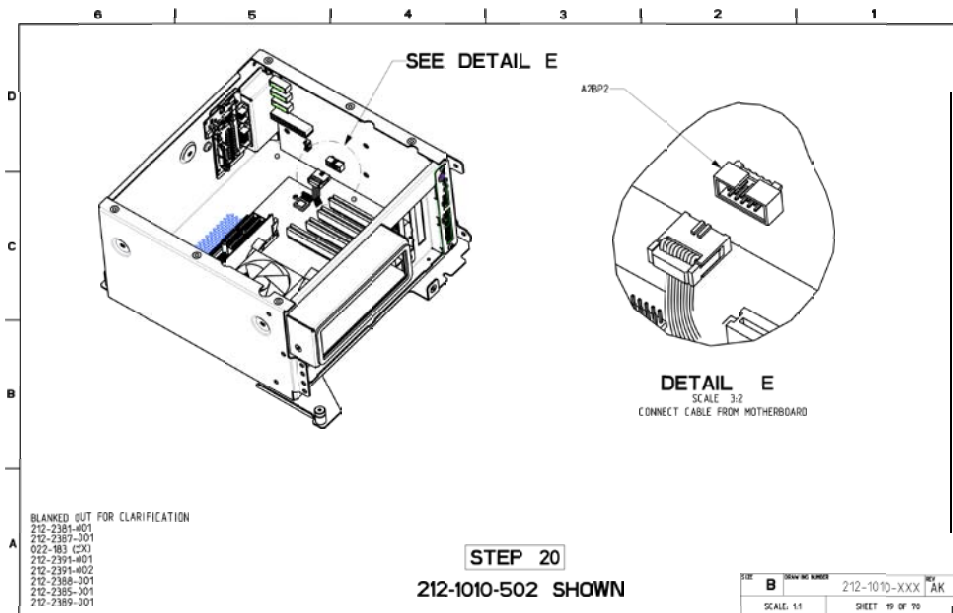
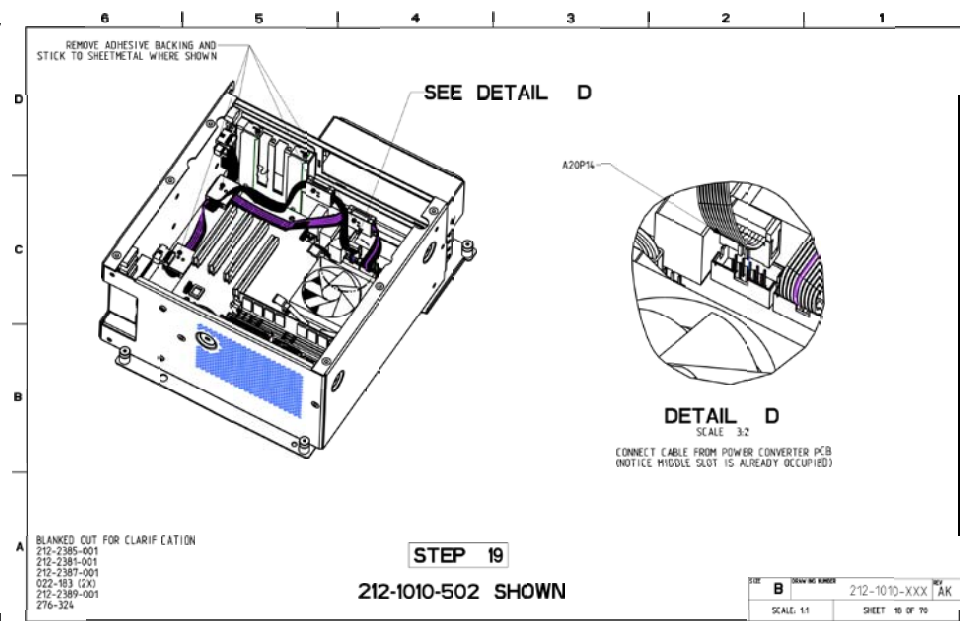
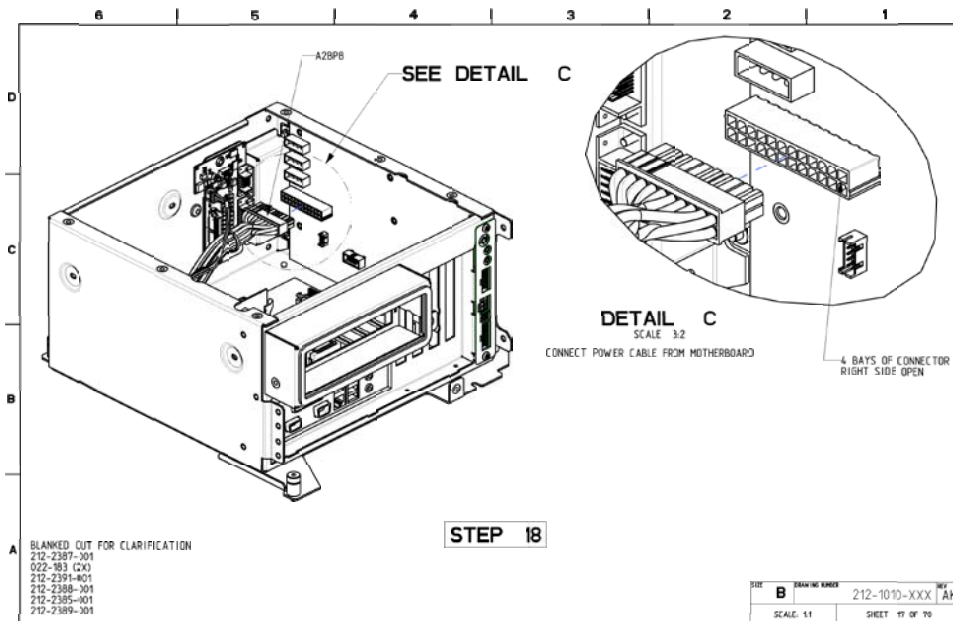
STEP 3

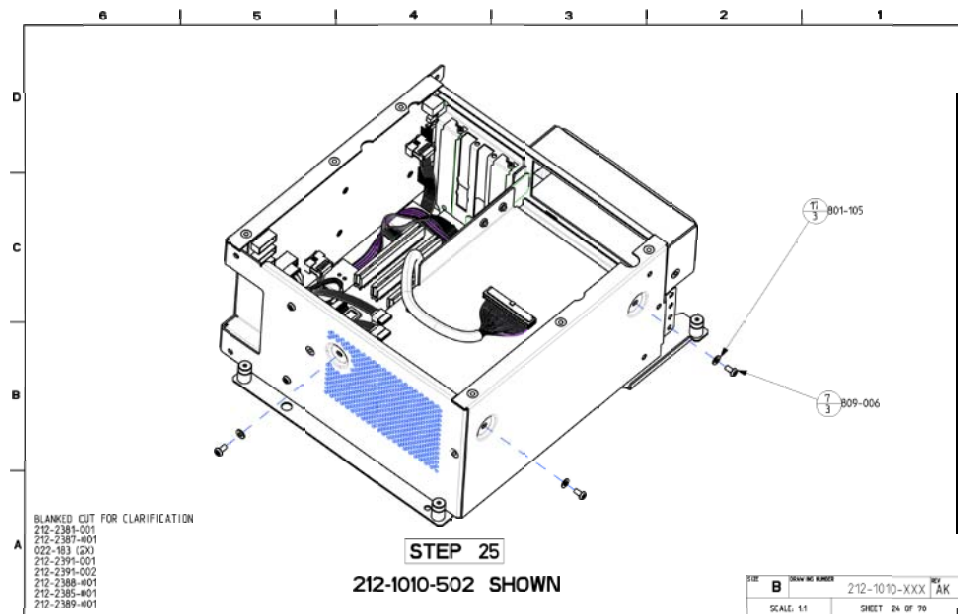
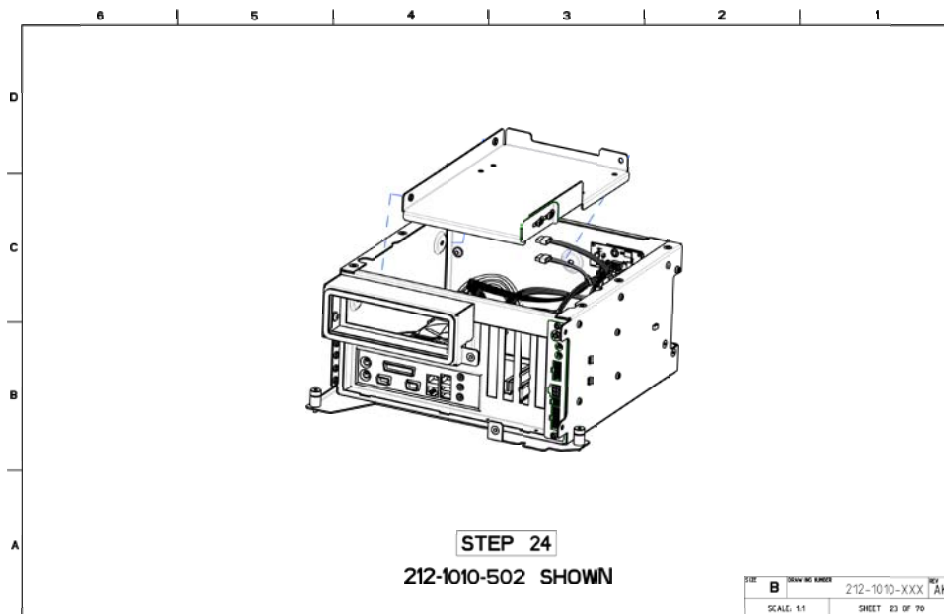
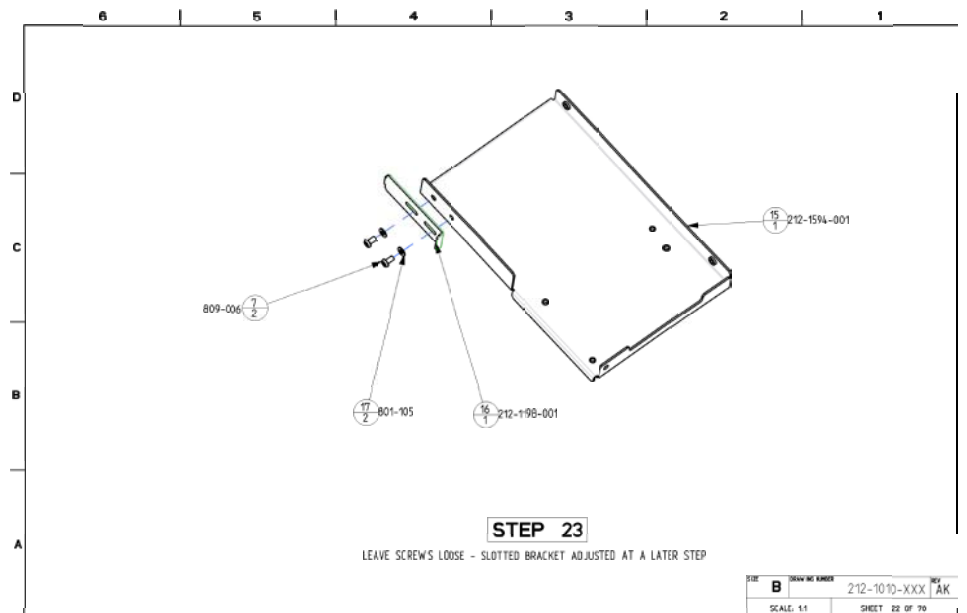
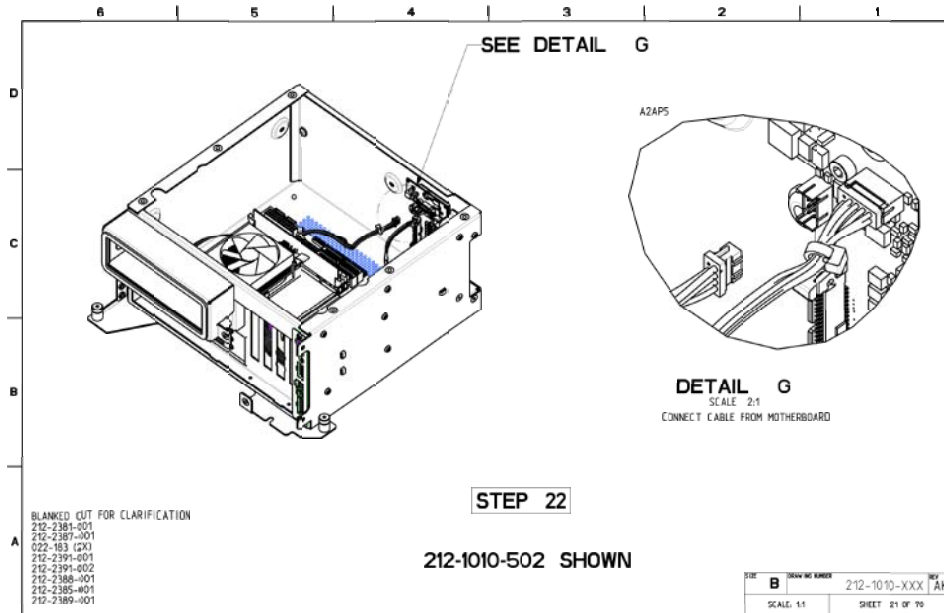
SIZE	B	DRAWING NUMBER	212-1010-XXX	REV	AK
SCALE: 1:1					SHEET 4 OF 70

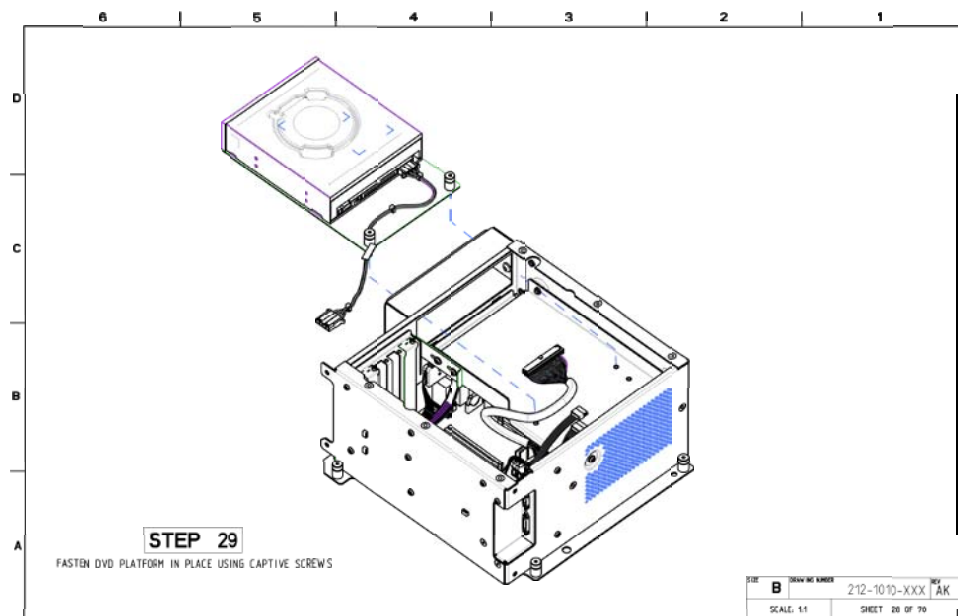
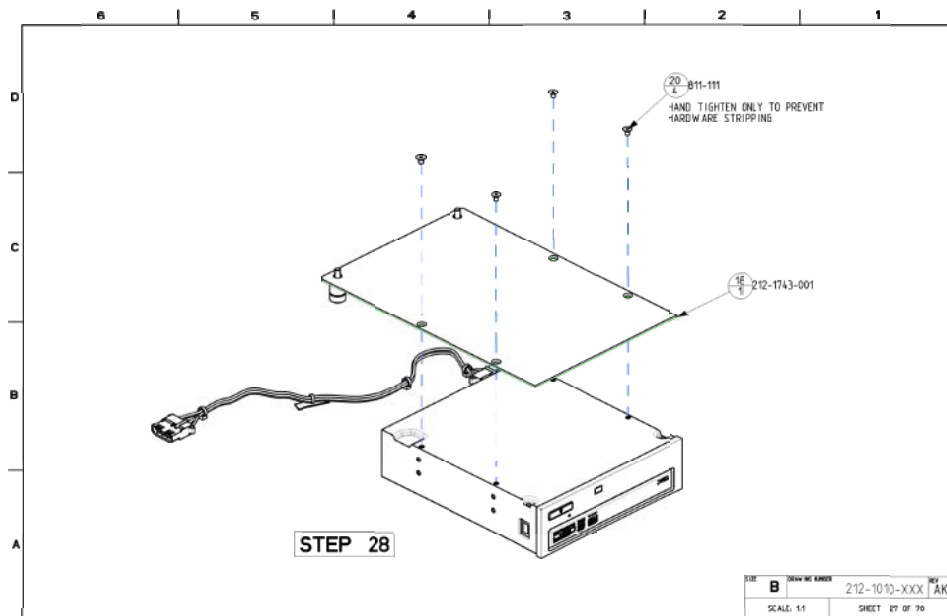
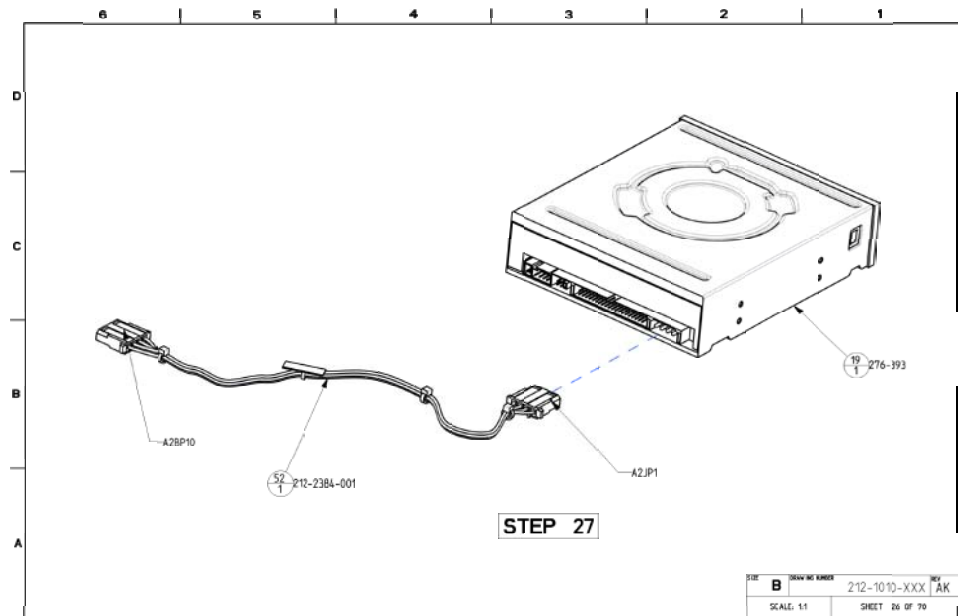
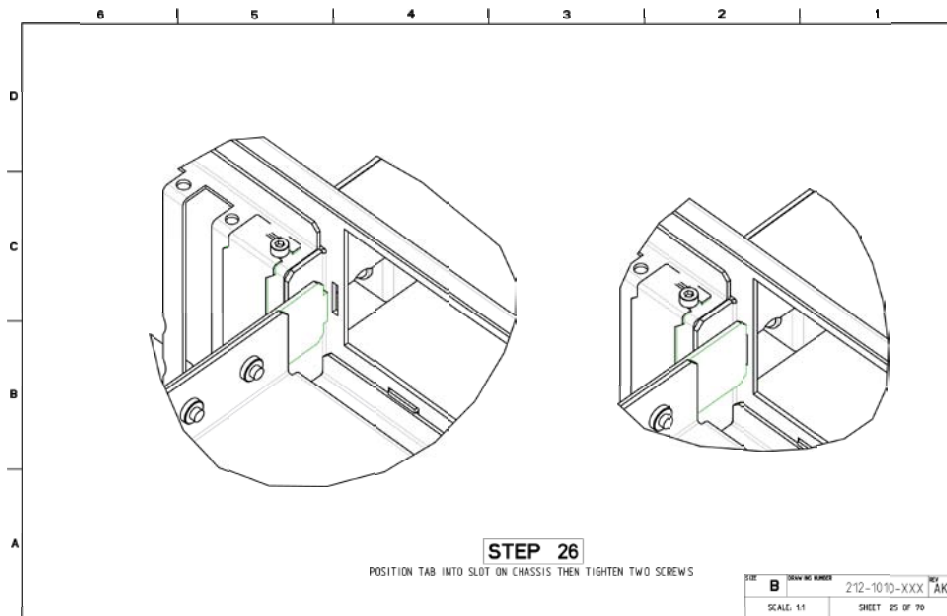


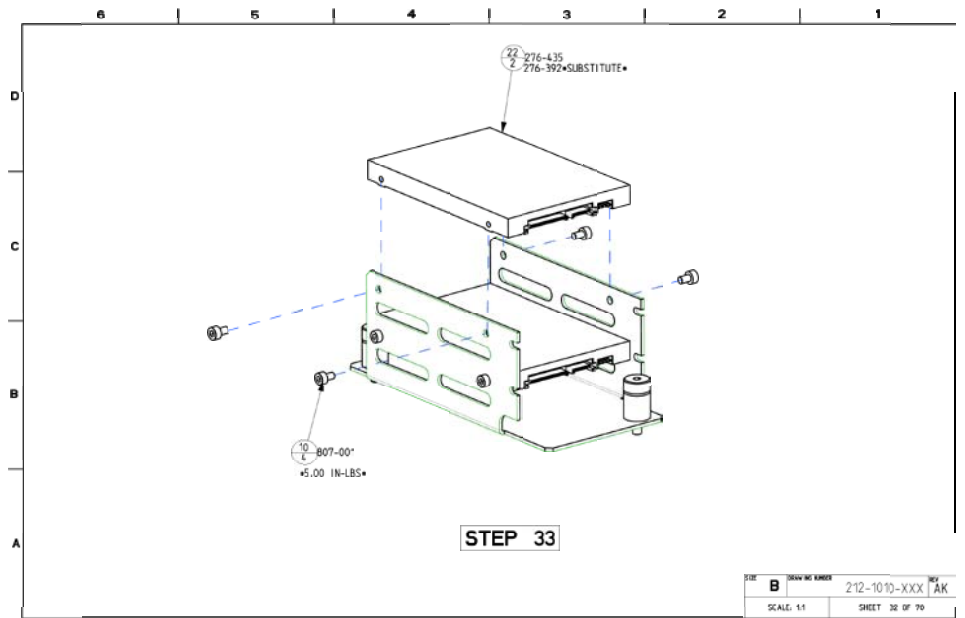
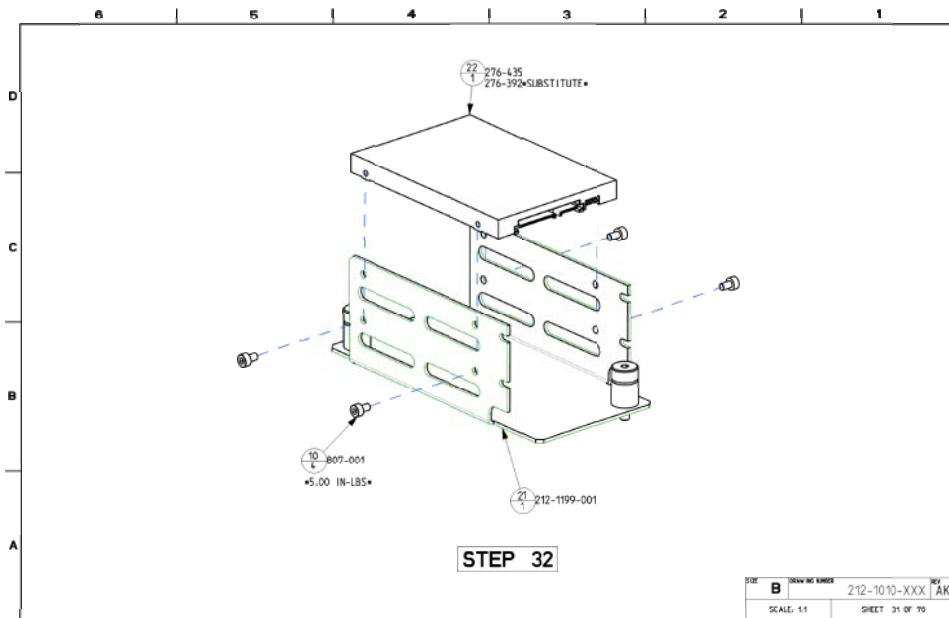
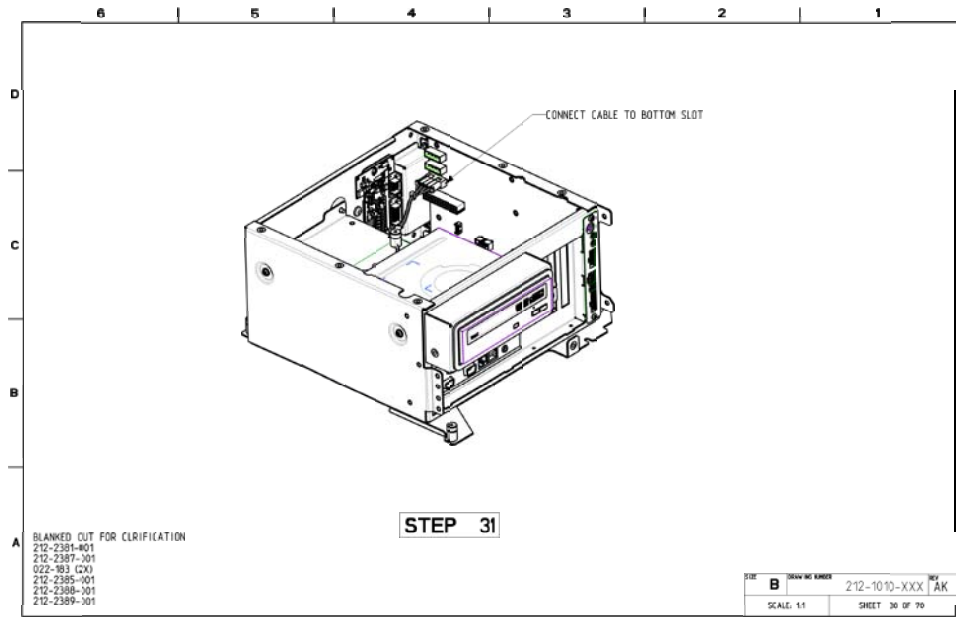
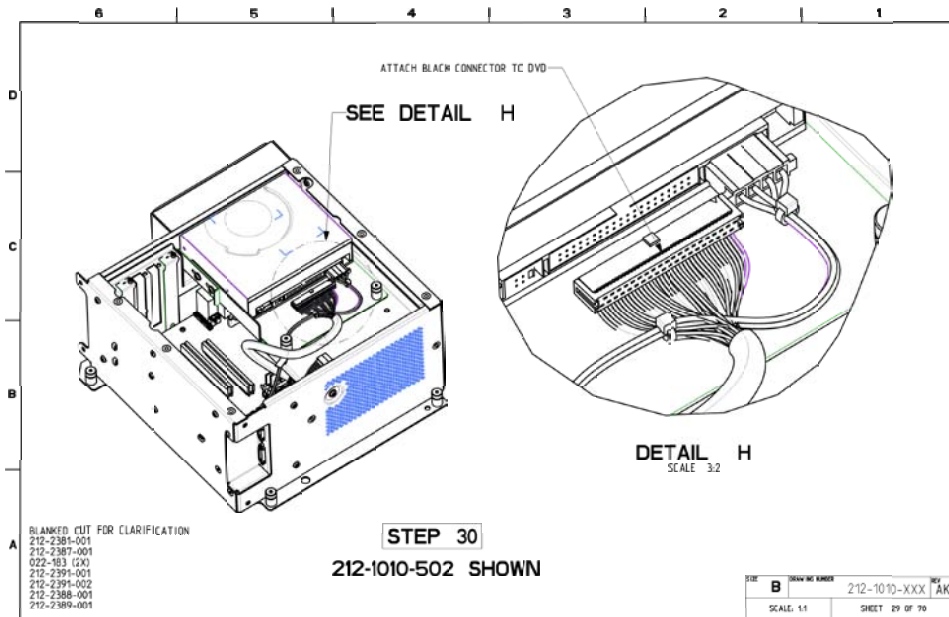


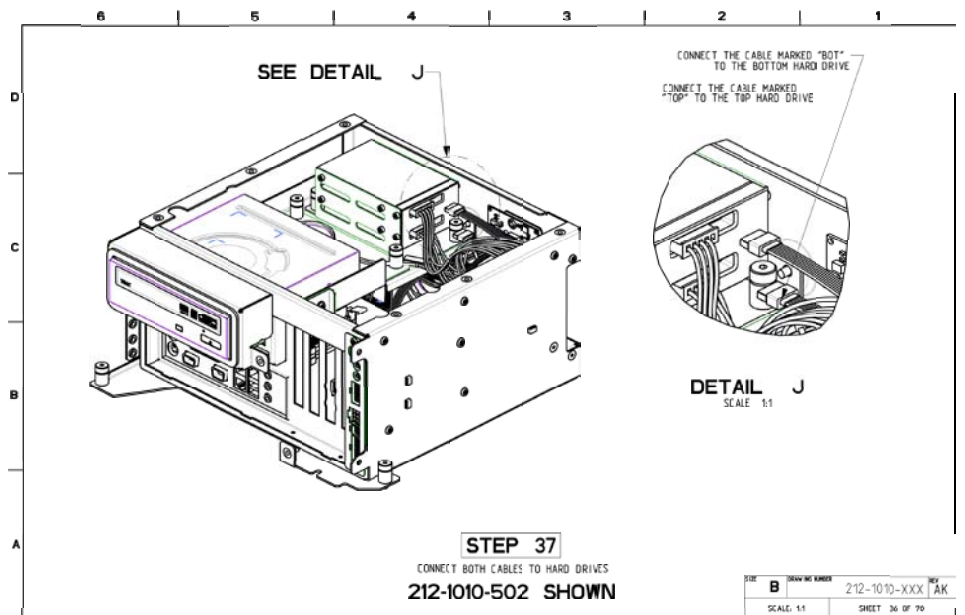
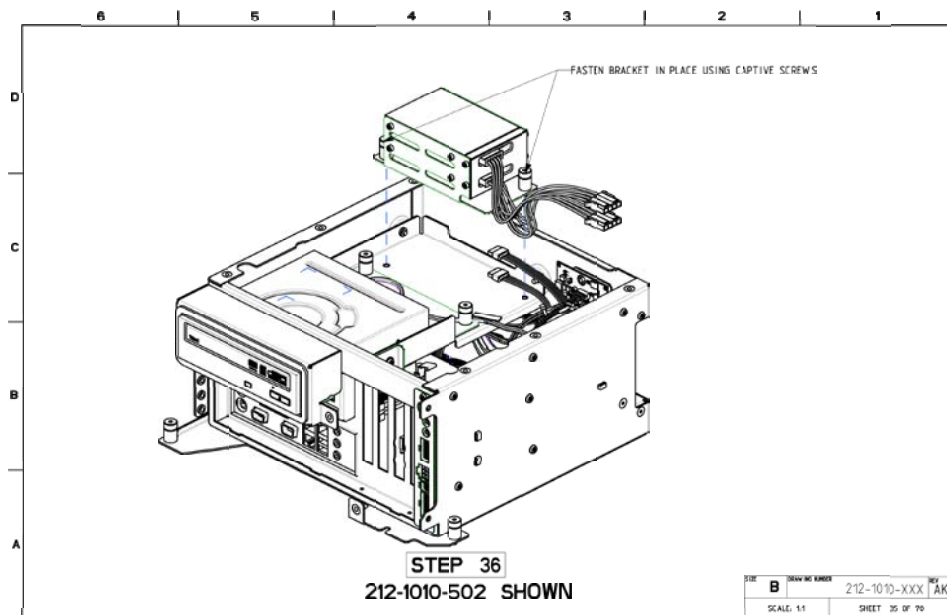
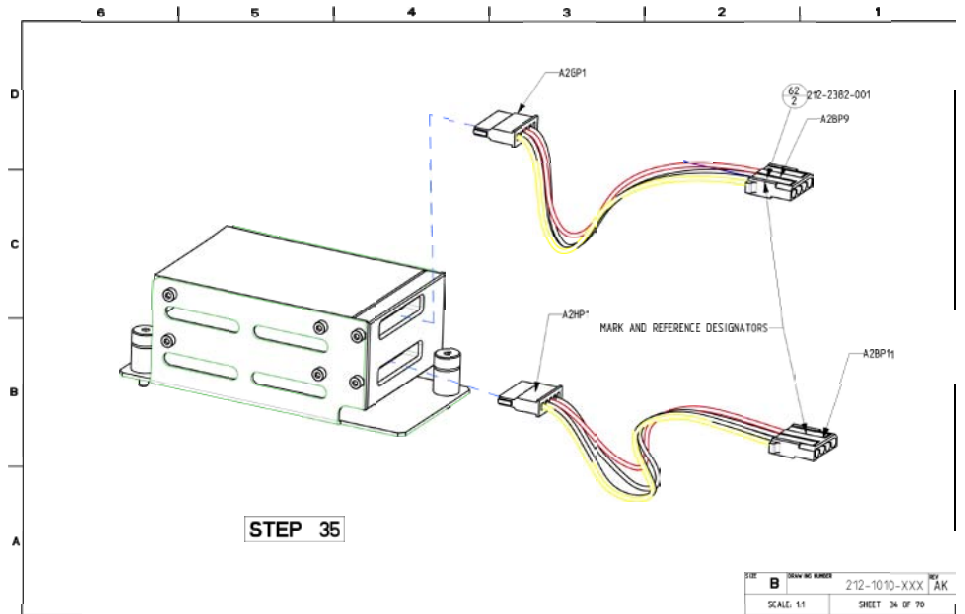
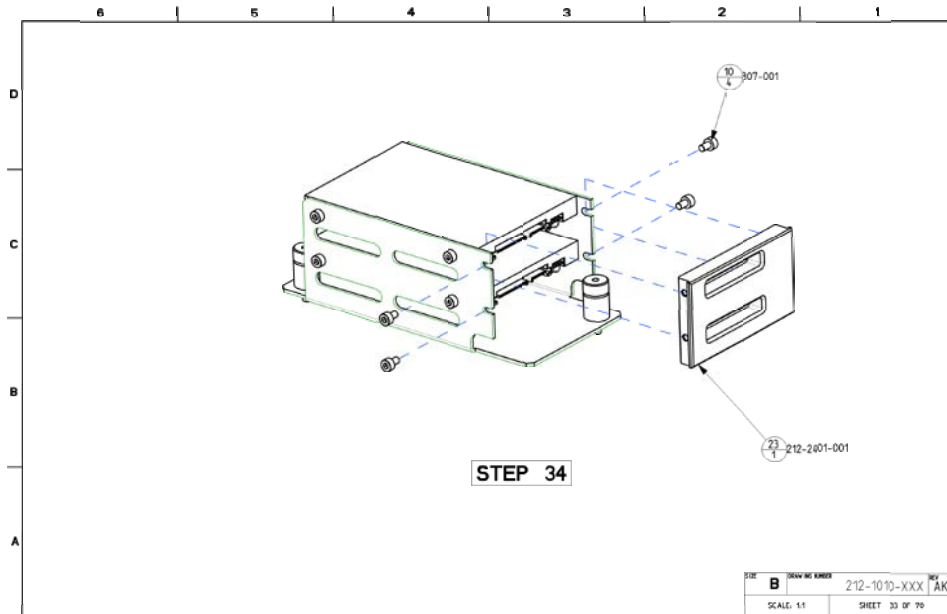


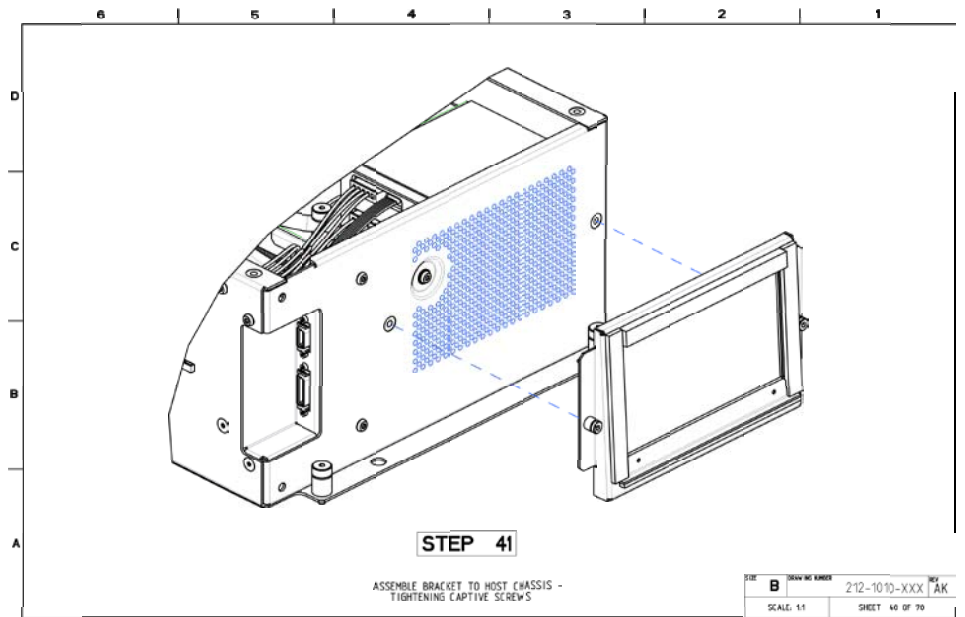
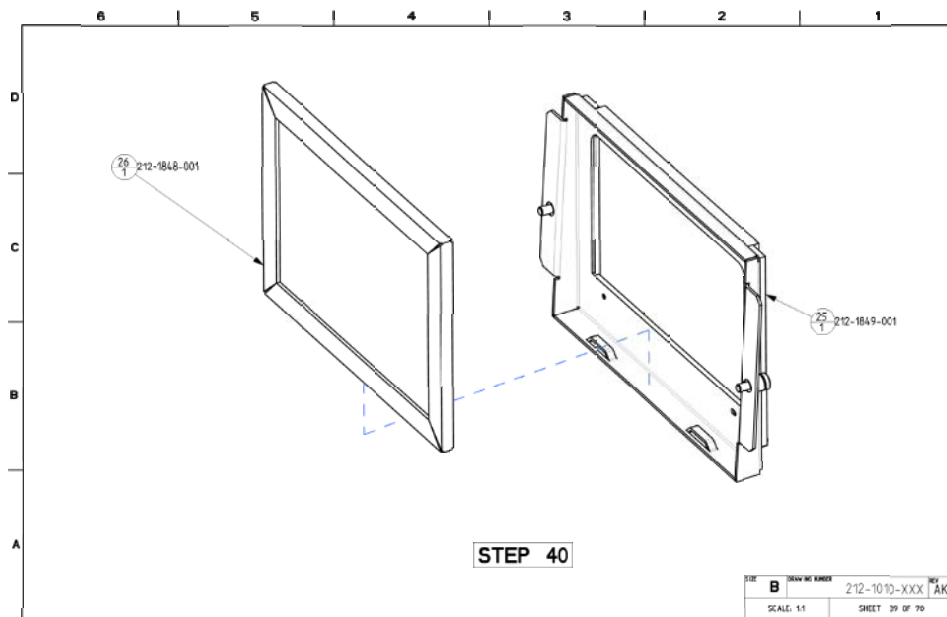
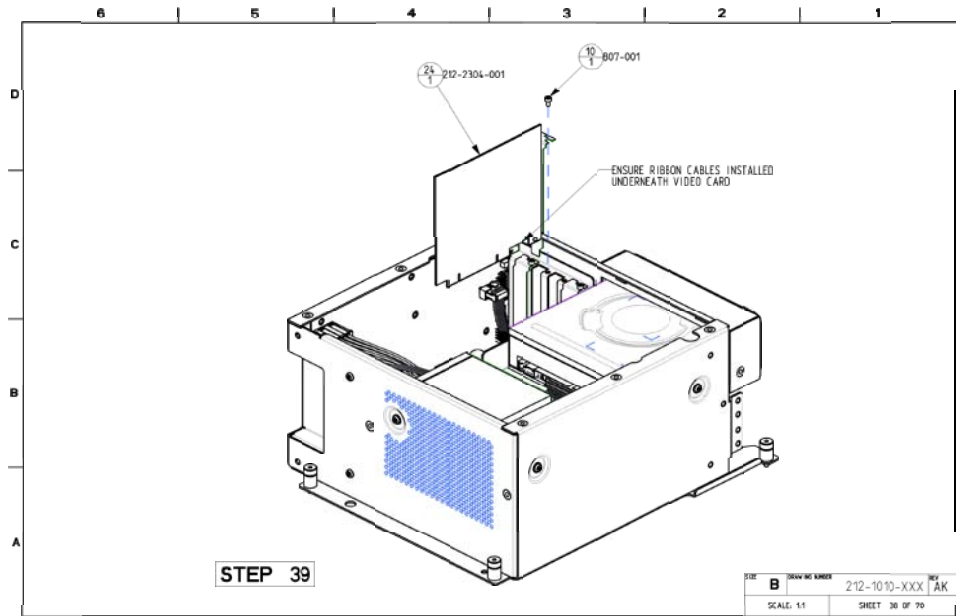
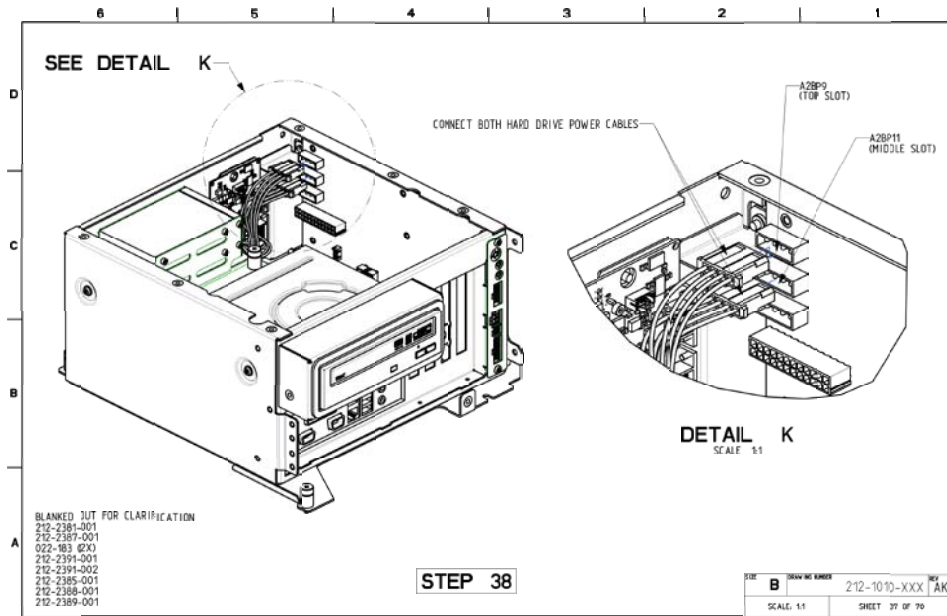


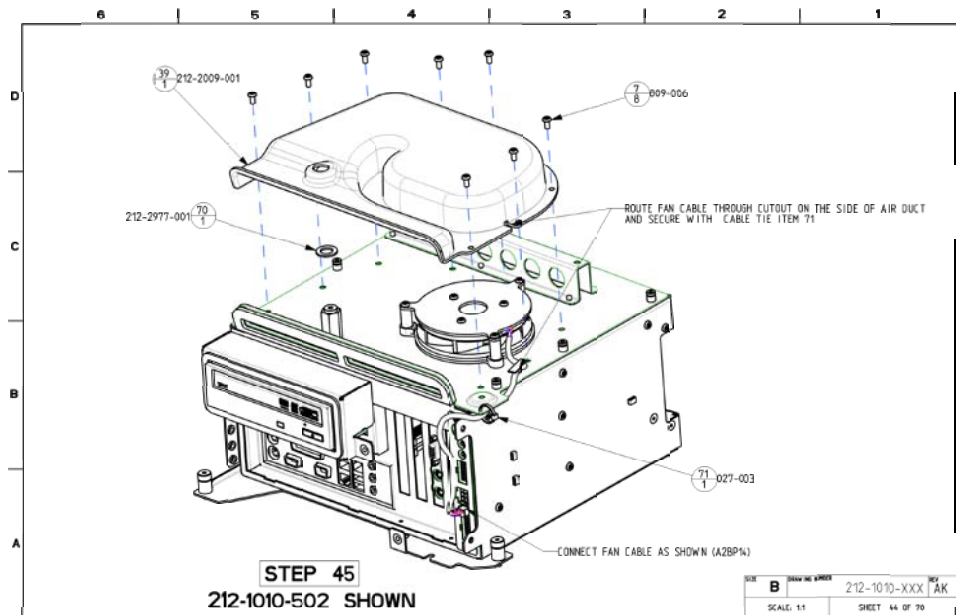
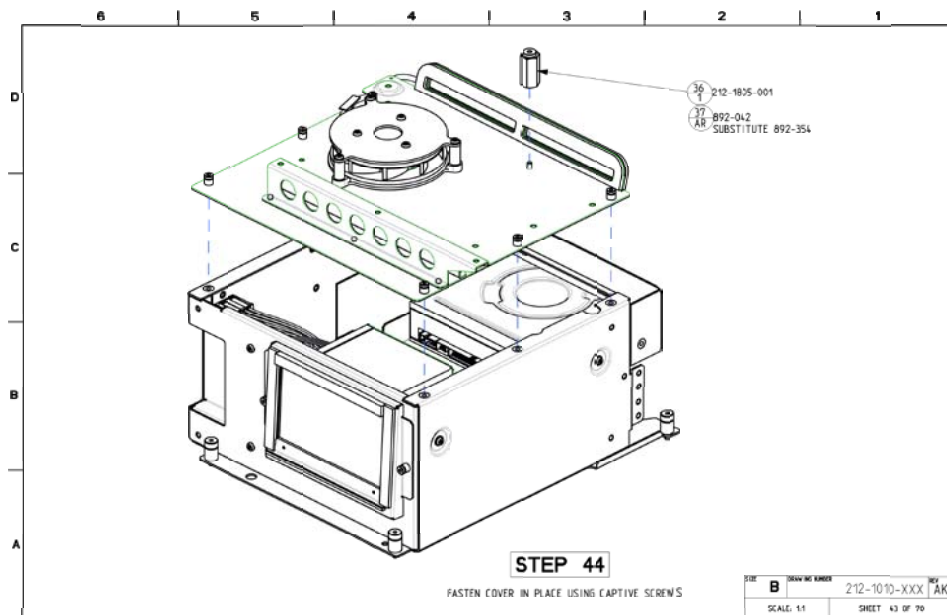
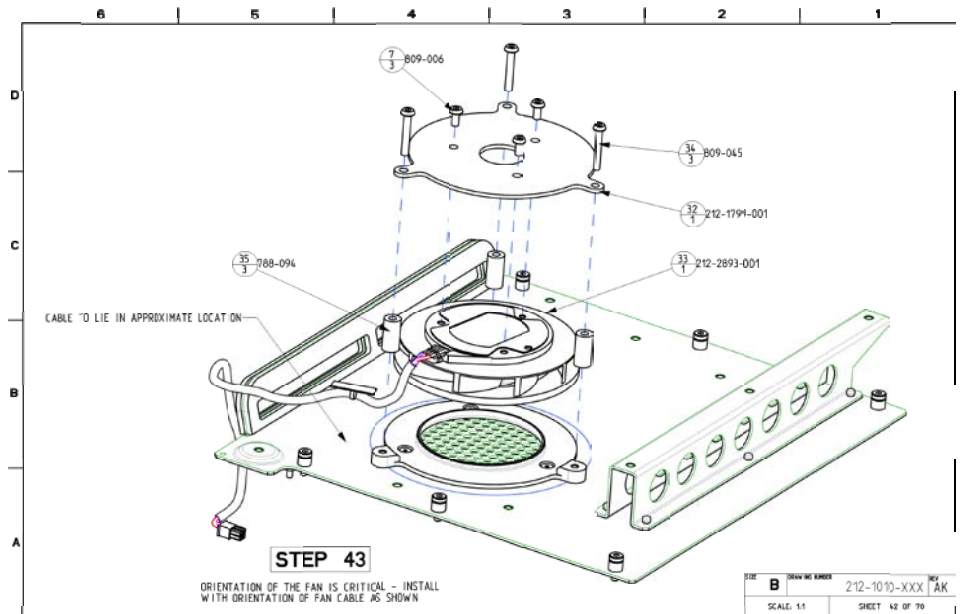
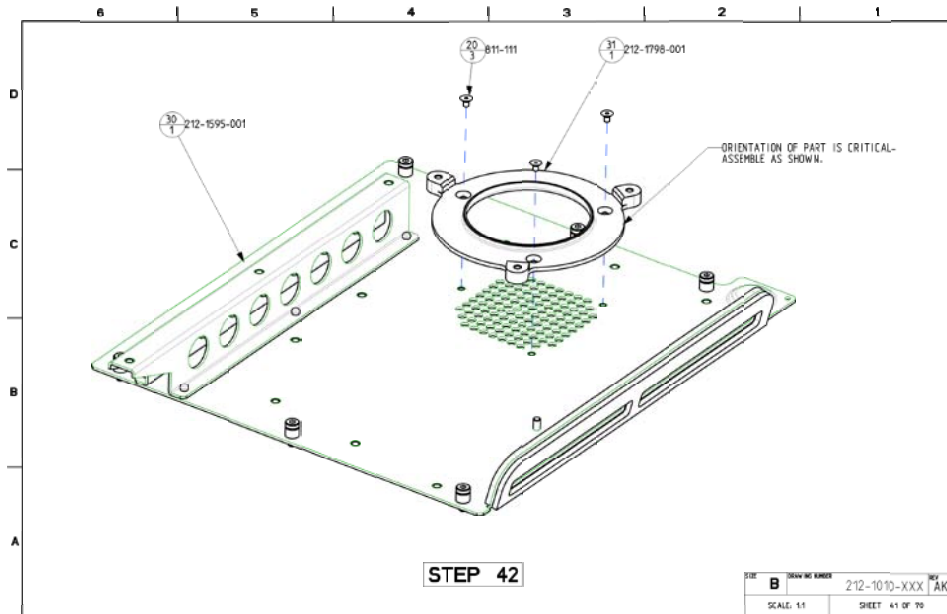


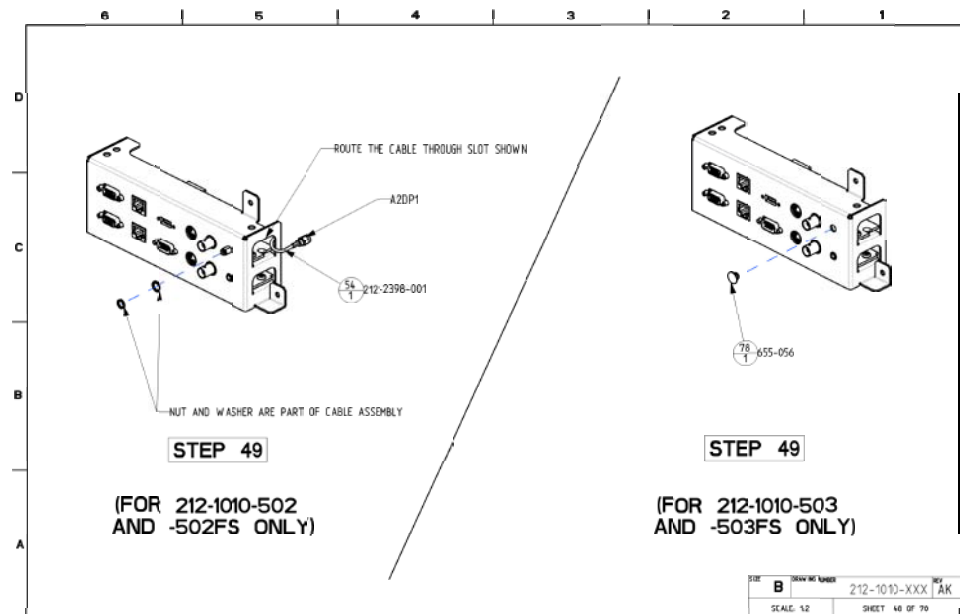
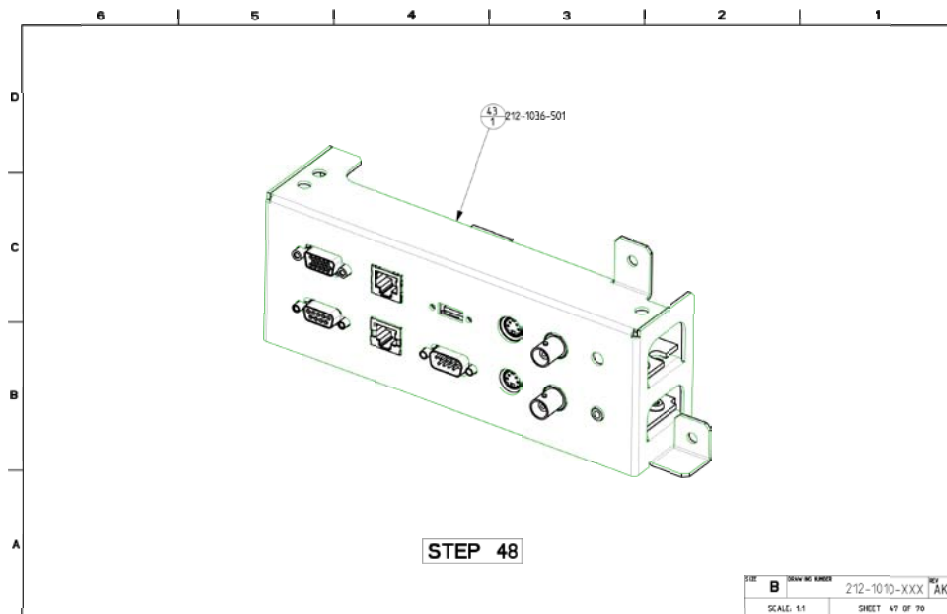
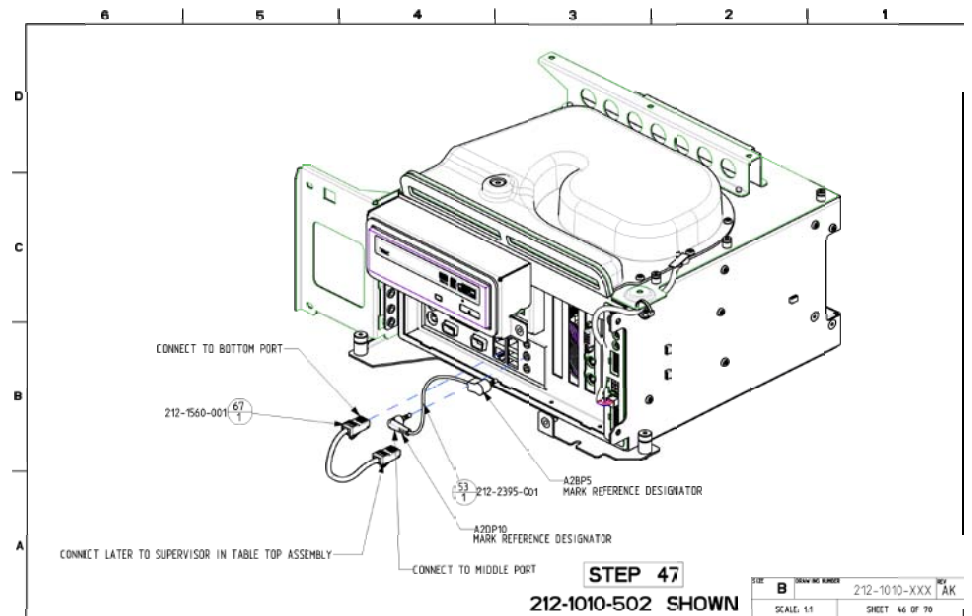
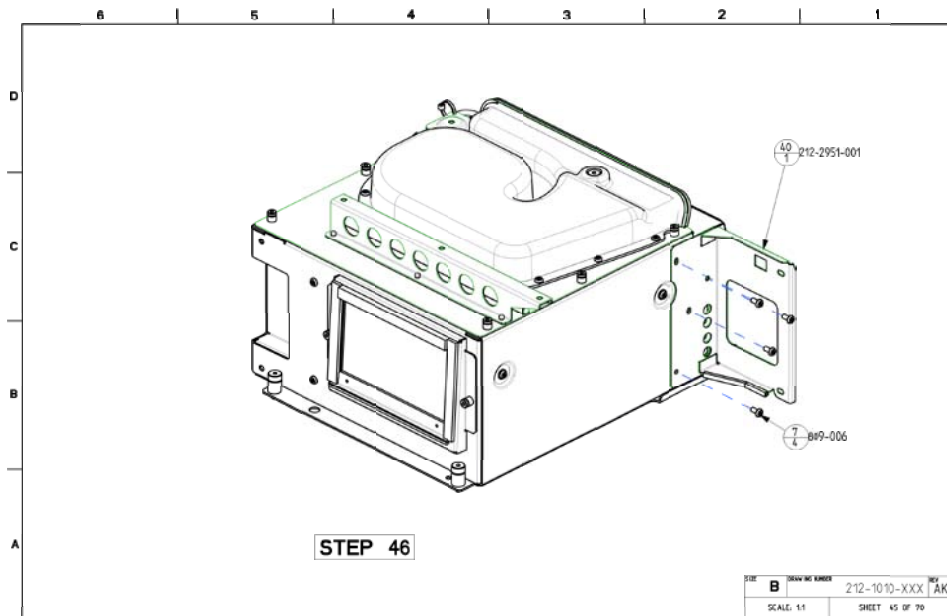


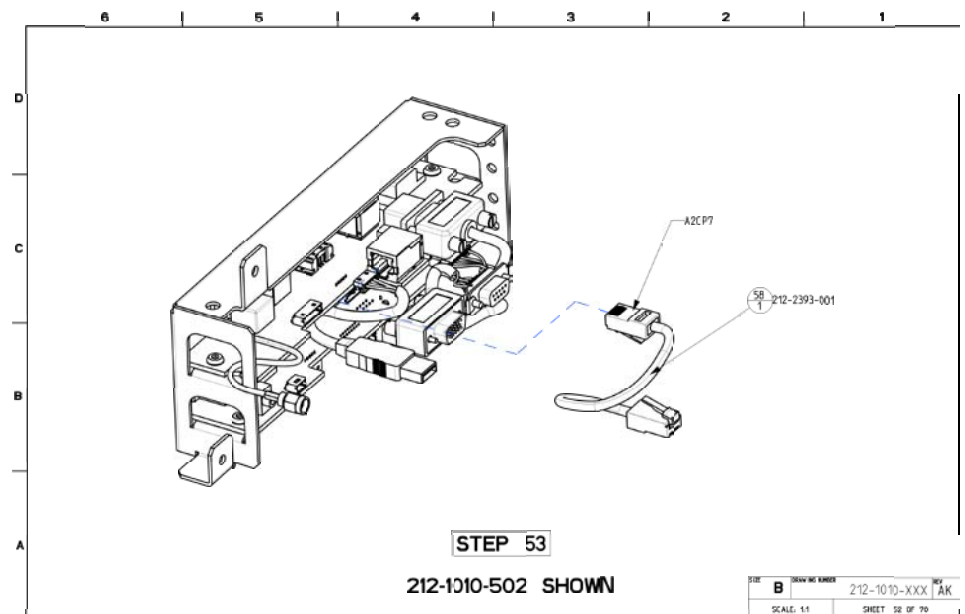
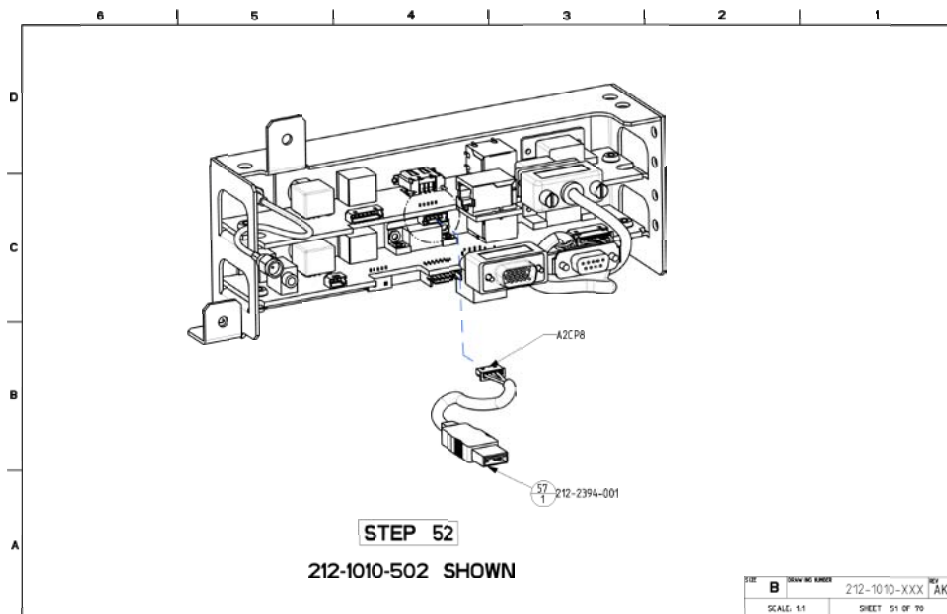
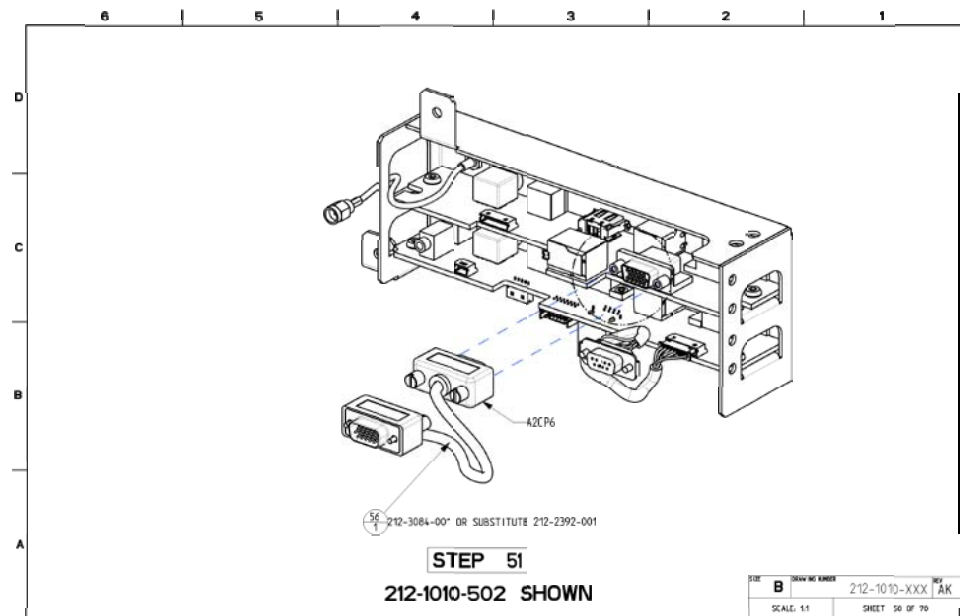
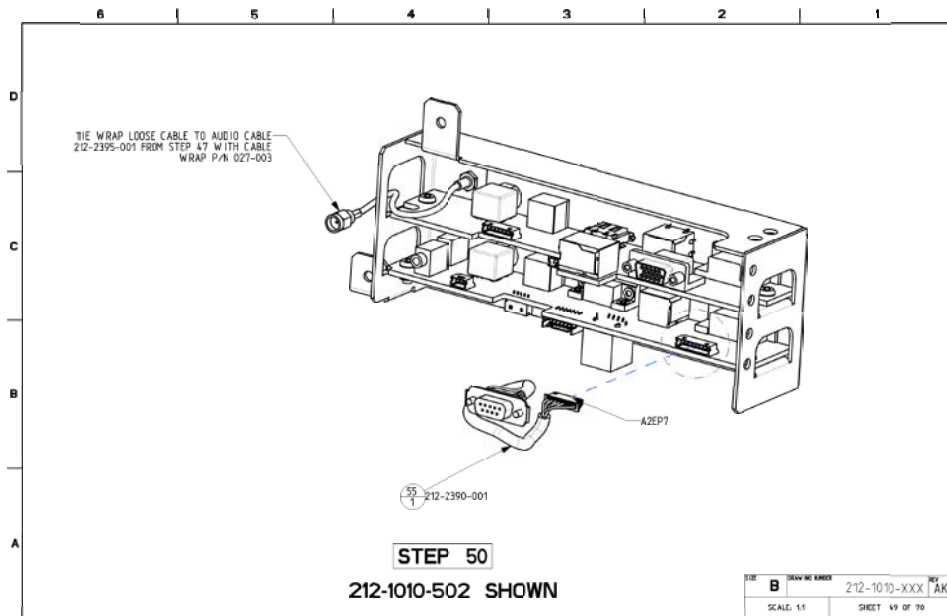


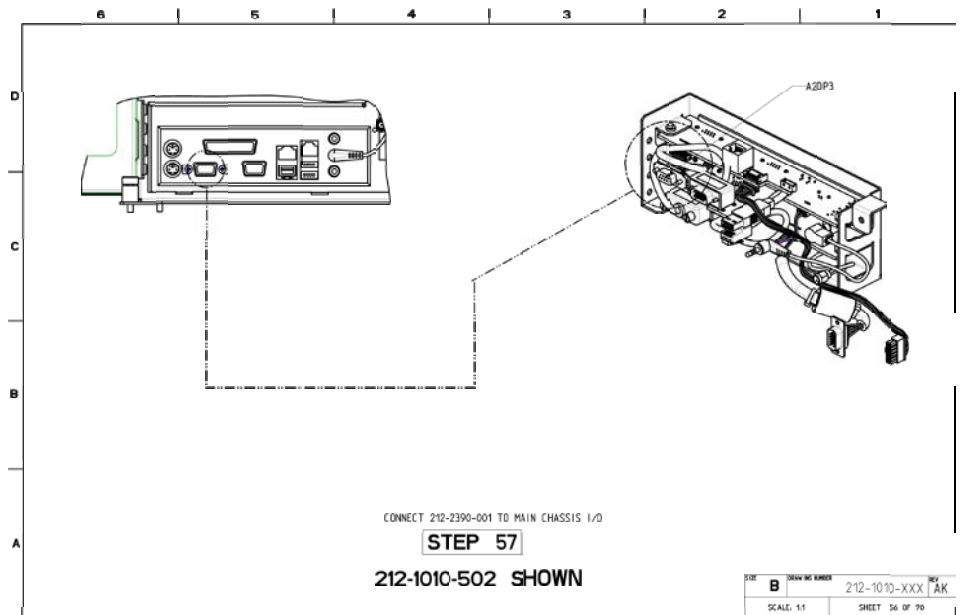
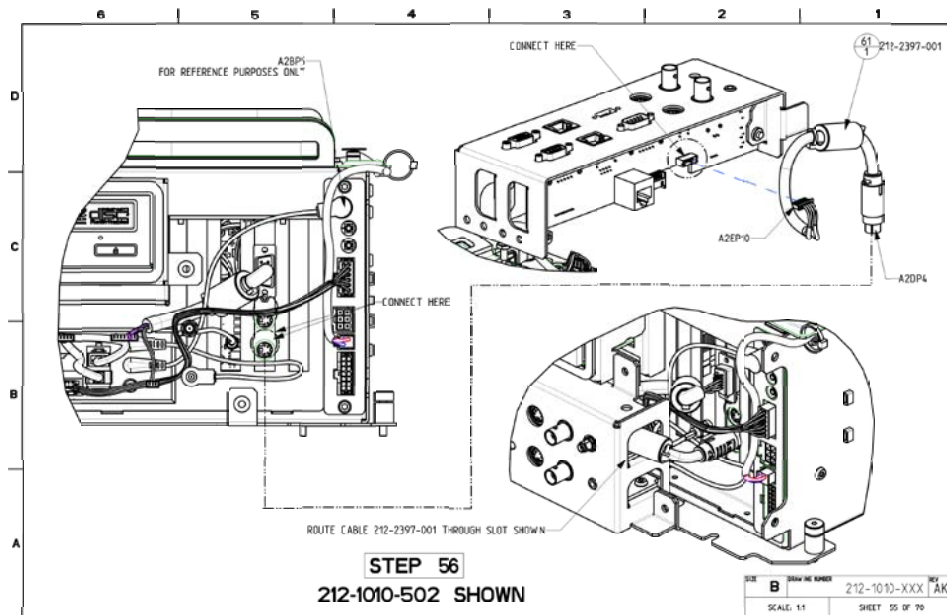
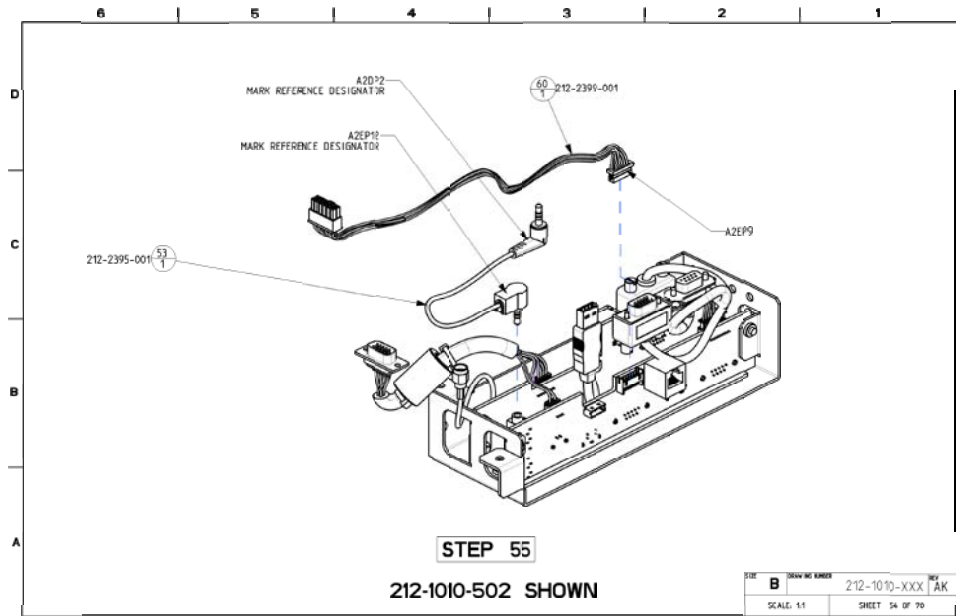
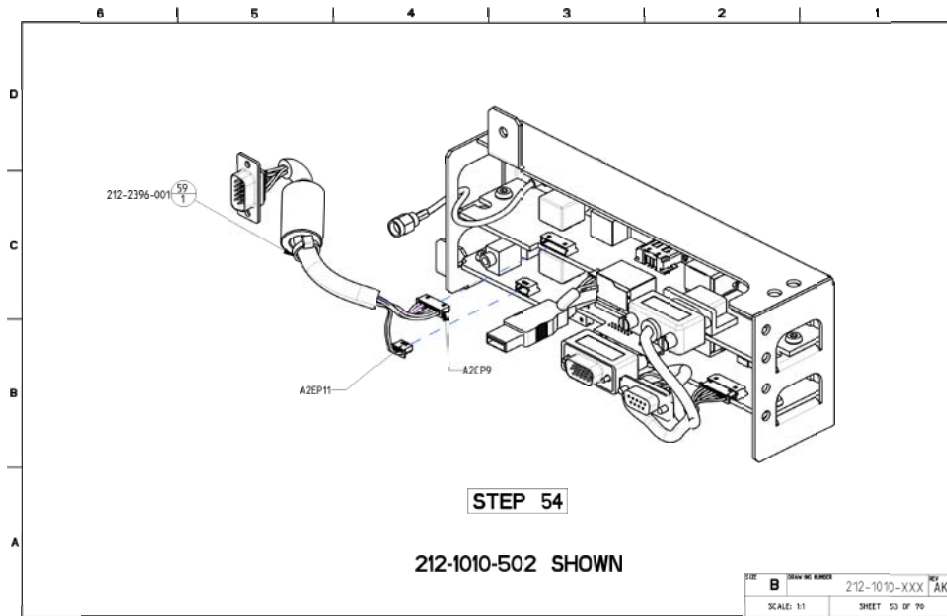


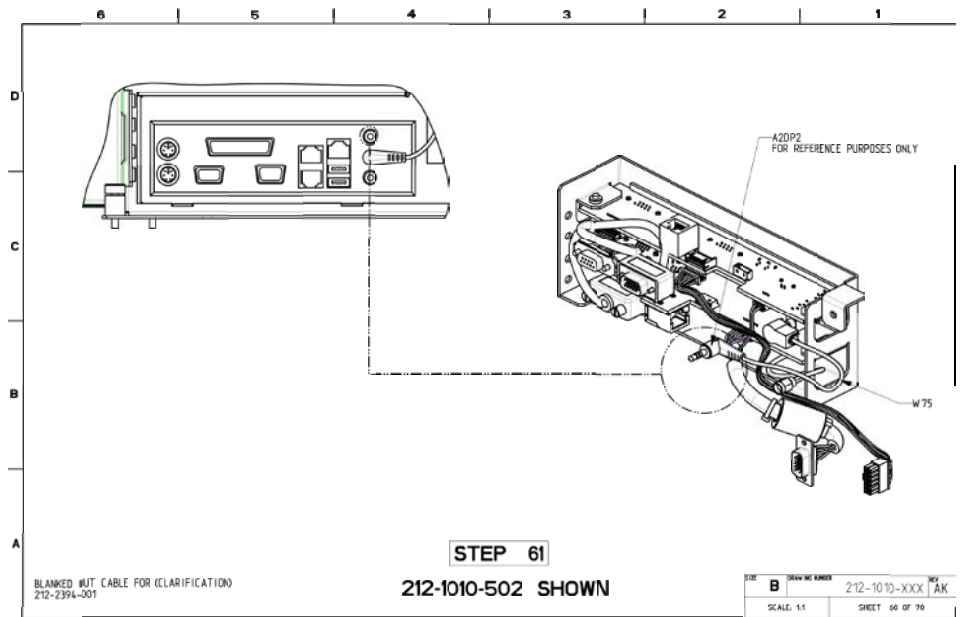
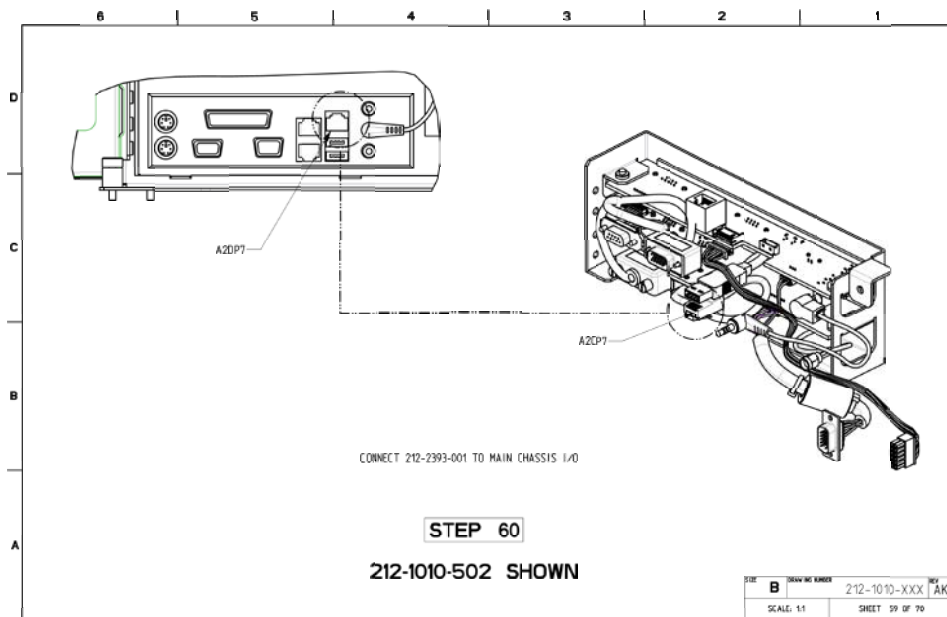
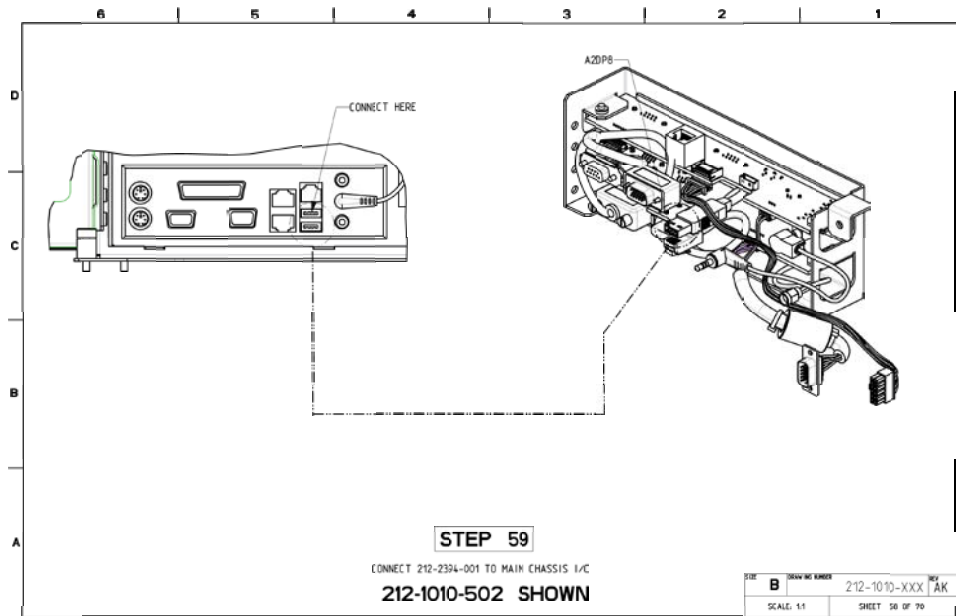
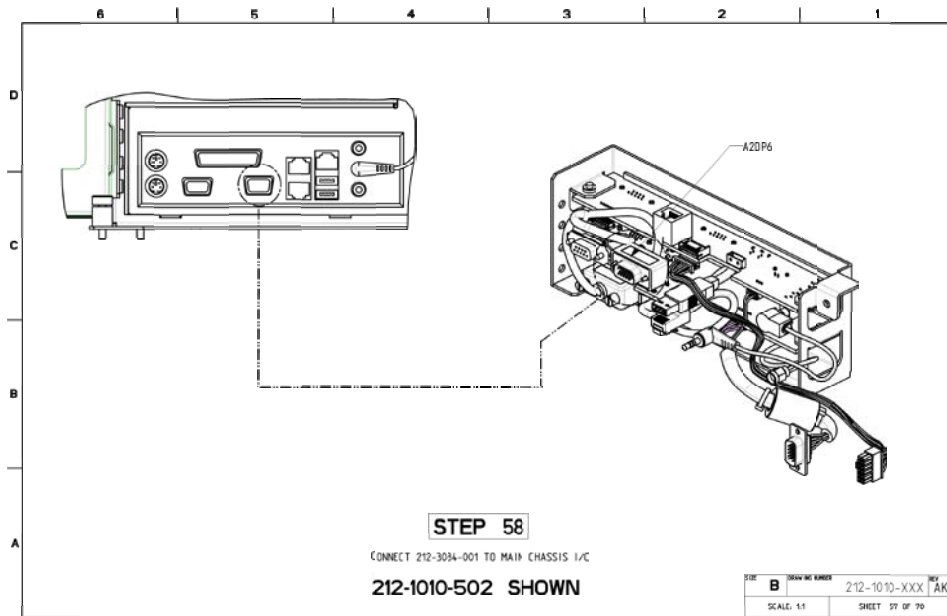


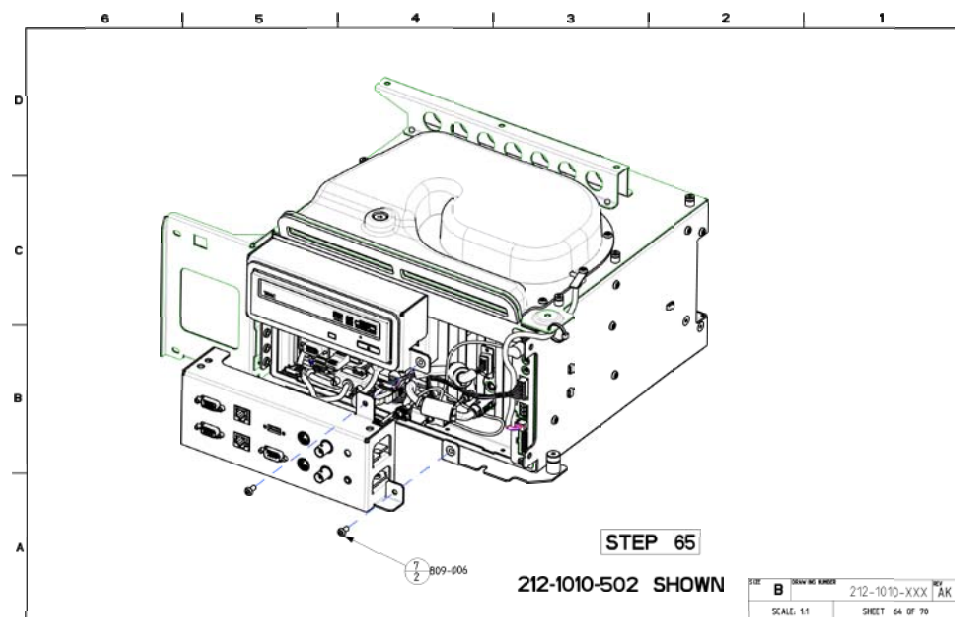
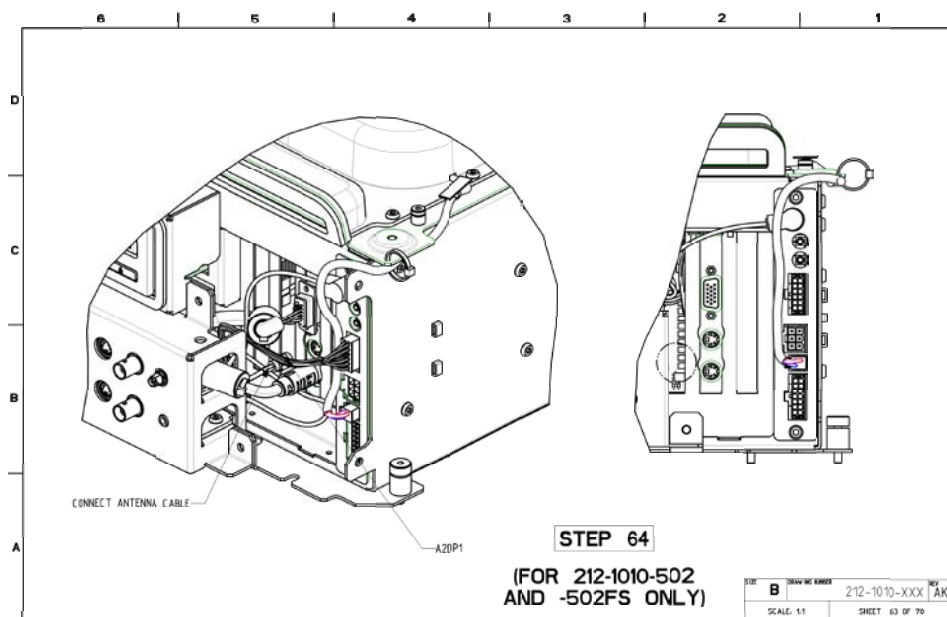
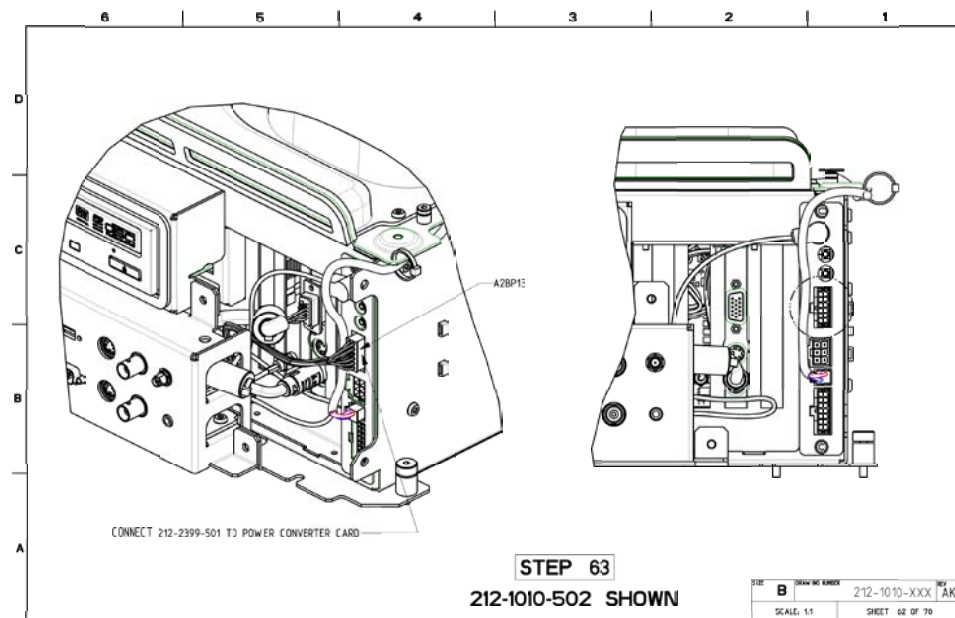
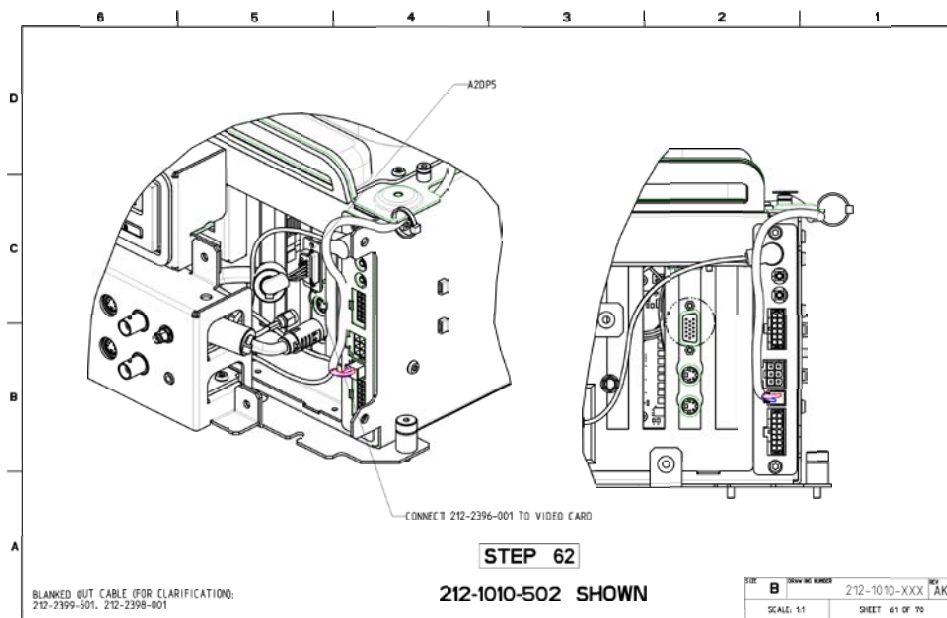


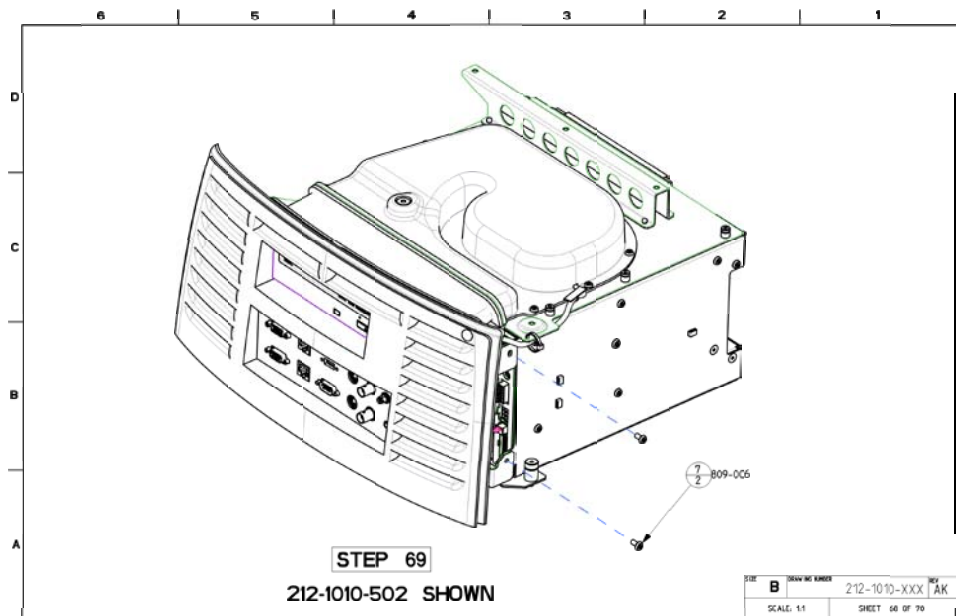
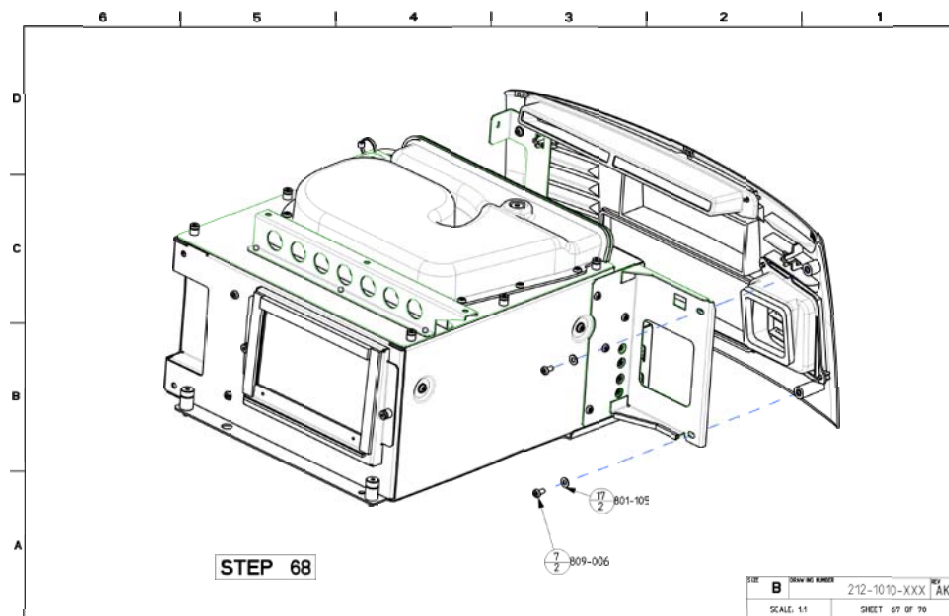
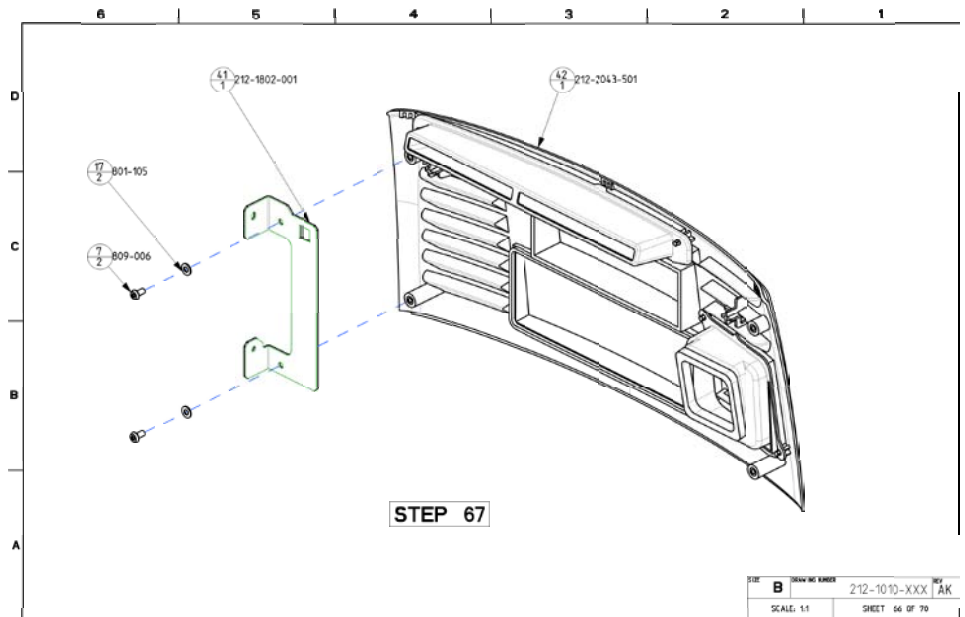
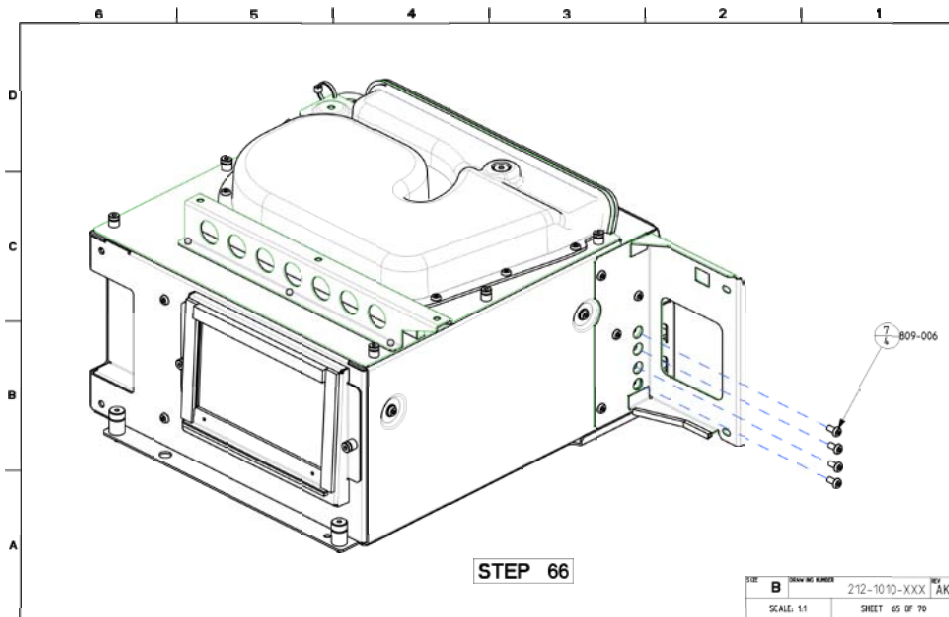


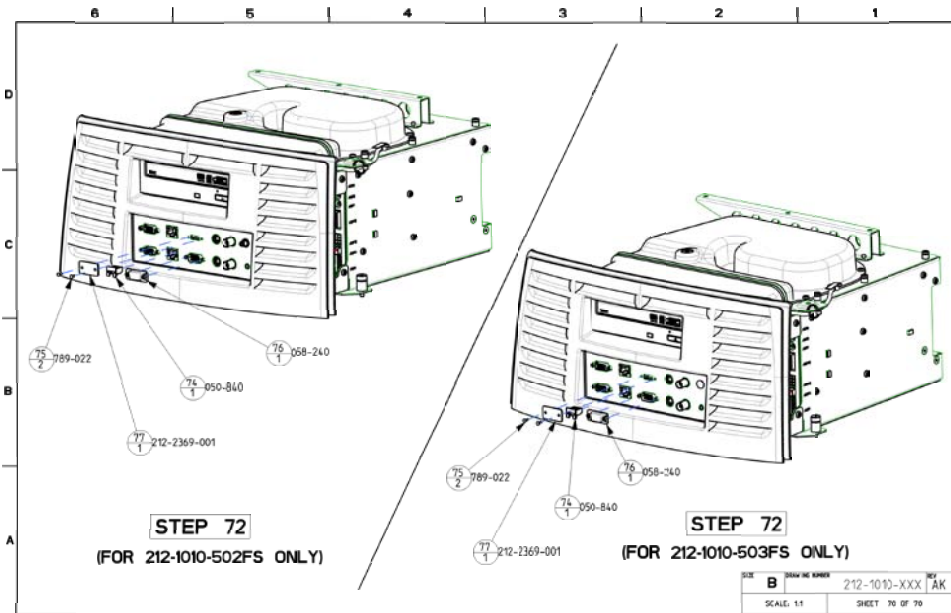
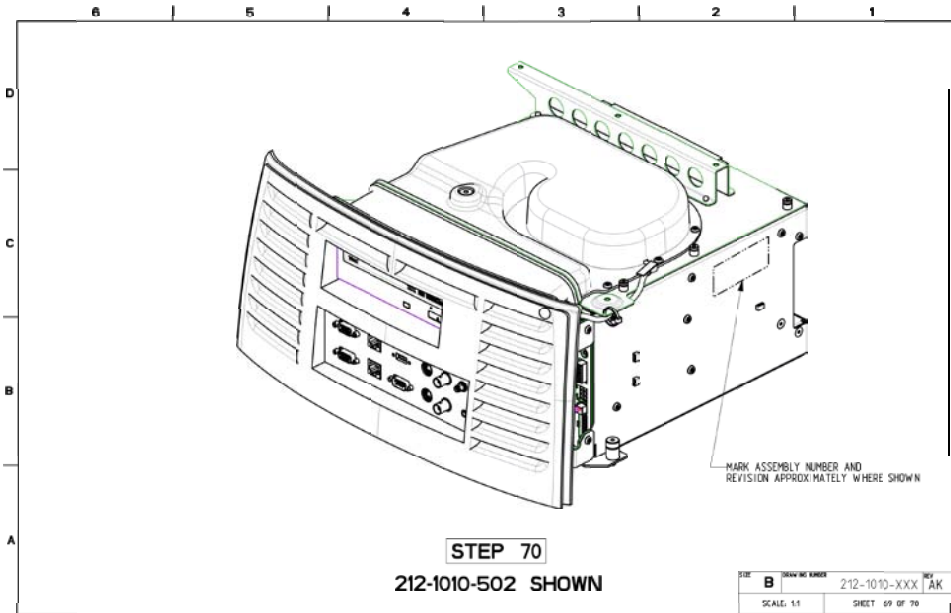












212-1036-501 ASSY, PANEL, EXPANSION (Old WiFi)

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-1596-001	PANEL,CONNECTOR,EXPANSION ASSY	1
2	212-1868-501	ASSY,PCB,UPPER EXPANSION	1
3	809-006	SCREW,BTN HD SKT,M4X8 SST	4
4	212-1869-501	ASSY,PCB,LOWER EXPANSION	1
7	212-2949-001	GASKET,EMI,UPPER HOST MODULE	1
8	212-2950-001	GASKET,EMI,LOWER HOST MODULE	1

NOTES: UNLESS OTHERWISE SPECIFIED

- INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
- UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
- BALLOON SHOWS ITEM (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
- SXXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -SXX SERIES P/N.
- BUILD PER 992-2120-001.

REVISION HISTORY

REV	ECN	DATE
P21	NOT RELEASED	03/12/08
A	20080791	03/17/08
B	200802041	08/12/08
C	20100957	06/22/10
D	20102198	01/11/11

-501 SHOWN

TABULATION				
PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-1036-501	ASSY,PANEL,EXPANSION	212-1036-501FS	D	ASSY,PANEL,EXPANSION SERVICE

SEE SEPARATE PART LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
1	212-1596-001	PANEL,CONNECTOR,EXPANSION ASSY		
1	212-1868-501	ASSY,PCB,UPPER EXPANSION		
1	212-1869-501	ASSY,PCB,LOWER EXPANSION		
1	212-2949-001	GASKET,EMI,UPPER HOST MODULE		
1	212-2950-001	GASKET,EMI,LOWER HOST MODULE		

DATE: 06/28/06
BY: J. ATHERLEY
CHECKED: 03/05/08
DATE: 03/05/08
BY: D. CHOVANEC
APPROVED: 03/06/08
DATE: 03/06/08
BY: J. FOSTER
FORM: 2/23/2007

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Alcon
Irvine, California 92618

DESCRIPTION: ASSY,PANEL,EXPANSION
P/N: 212-1036-XXX
SCALE: 1:1
SHEET: 1 OF 5

POPLINK MODEL ATTRIBUTES: NAME: 212-1036-501_PROD
VERSION: D.1

P/N TOWARD PANEL

SLIDE GASKET OVER PER CONNECTORS

212-2949-001

809-006

212-1868-501

212-1596-001

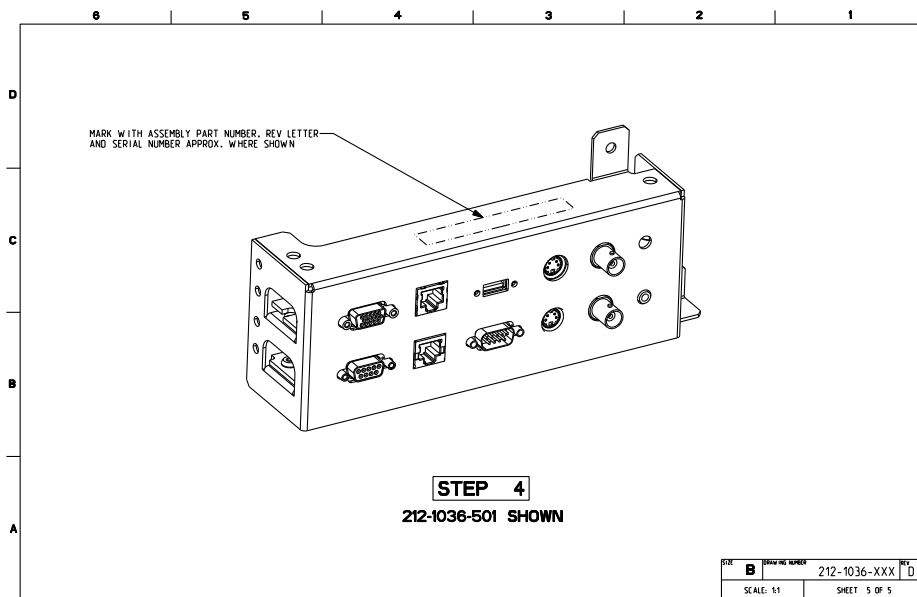
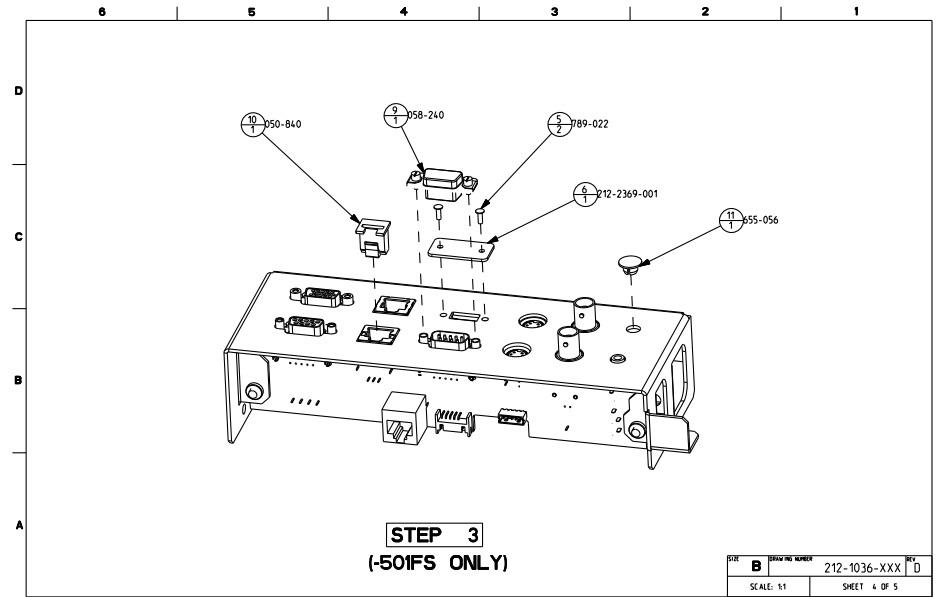
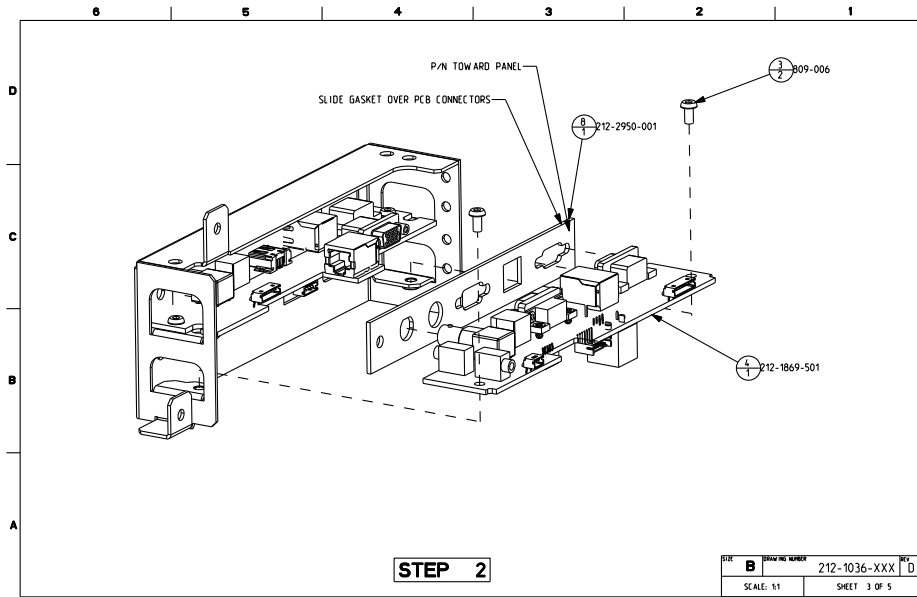
STEP 1
REMOVE BREAKAWAY TABS

DATE: 06/28/06
BY: J. ATHERLEY
CHECKED: 03/05/08
DATE: 03/05/08
BY: D. CHOVANEC
APPROVED: 03/06/08
DATE: 03/06/08
BY: J. FOSTER
FORM: 2/23/2007

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Alcon
Irvine, California 92618

DESCRIPTION: ASSY,PANEL,EXPANSION
P/N: 212-1036-XXX
SCALE: 1:1
SHEET: 2 OF 5



212-3408-501 ASSY, MODULE, HOST (CR3)

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-1593-001	CHASSIS ASSY,MODULE,HOST	1
4	210-2513-005	PCBA,CPU,FLEX-ATX PM 1GB	1
5	809-002	SCREW,BTN HD SKT,M3X8 SST	6
6	212-1203-501	ASSY,PCB,DC-DC CONVERTOR	1
7	809-006	SCREW,BTN HD SKT,M4X8 SST	43
8	212-2023-001	BRACKET,DISPLAY,HOST PCBA	1
9	212-1796-501	ASSY,PCB,HOST DISPLAY	1
10	807-001	SCREW,CAP HD SKT,M3X5 SST	17
11	807-148	SCREW,CAP HD SKT,M2.5X6 SST	4
13	212-2828-001	PANEL,PCB,REAR HOST	1
14	058-239	BRACKET,COMPUTER CARD,BLANK	3
15	212-1594-001	PLATFORM,MOUNTING,HOST	1
16	212-1198-001	PLATFORM,BRACKET,SPRT HOST MOD	1
17	801-105	WASHER,FLAT,M4 SST W/BLK OXD	9
18	212-1743-001	PLATE,MOUNTING,HOST DVD	1
19	276-393	DRIVE,DVD-R/W,ATAPI BLK BEZEL	1
19	276-374	DRIVE,DVD-R/W,ATAPI BLK BEZEL - SUB	1
20	811-111	SCREW,FLAT HD SKT,M3X5 SST	7
21	212-1199-001	BRACKET,MOUNTING,HOST MODULE	1
22	276-392	DRIVE,HD,2.5 IN SATA 160GB	2
22	276-370	DRIVE,HD,2.5 IN SATA 160GB - SUB	2
23	212-2401-001	PLATE,COVER,HARD DISK CONN	1
24	212-3327-001	PCB ASSY,VIDEO HD OVERLAY,PCI	1
25	212-1849-001	HOUSING,FILTER,HOST AIR	1
26	212-1848-001	FILTER,AIR,HOST	1
30	212-1595-001	COVER,HOST	1
31	212-1798-001	PLATE,FAN INTAKE,HOST	1
32	212-1799-001	PLATE,MOUNTING,FAN HOST	1
33	212-2893-001	CABLE ASSY,HOST,FAN W39	1
34	809-045	SCREW,BTN HD SKT,M4X25 SST	3
35	788-094	SPACER,.166X.375X.75LG,ALUM	3
36	212-1805-001	STANDOFF,HEX,TOP SKIN HOST	1
37	892-042	ADHESIVE,THREADLOCKER,242 BLUE	0
37	892-354	ADHESIVE,LOCTITE 2440 BLUE - SUB	0

ITEM #	PART NUMBER	DESCRIPTION	QTY
39	212-2009-001	AIR DUCT,MODULE,HOST	1
40	212-2951-001	BRACKET,MOUNTING,REAR SKIN RT	1
41	212-1802-001	BRACKET,MOUNTING,REAR SKIN LT	1
42	212-2043-501	ASSY,PANEL,REAR UPPER TABLETOP	1
43	212-3352-501	ASSY,PANEL,EXPANSION	1
44	212-2387-001	CABLE ASSY,FRONT PANEL USB,W66	1
45	212-2381-001	CABLE ASSY,ATX POWER,W58	1
46	212-2385-001	CABLE ASSY,IDE SIGNAL,DVD W64	1
47	212-2388-001	CABLE ASSY,LVDS SIGNAL,W67	1
48	022-183	CABLE,SATA SIGNAL,.3M	2
48	212-2383-001	CABLE ASSY,SATA SIG,W61/W62 - SUB	2
49	212-2391-001	CABLE ASSY,SERIAL,EXT W70	1
51	212-2389-001	CABLE ASSY,PWR FRONT PANEL W68	1
52	212-2384-001	CABLE ASSY,DVD POWER,W63	1
53	212-2395-001	CABLE ASSY,AUDIO EXT W75/W76	2
55	212-2390-001	CABLE ASSY,SERIAL,IO EXT W69	1
56	212-3084-001	CABLE ASSY,VGA,EXT W72	1
56	212-2392-001	CABLE ASSY,VGA,EXT W72 - SUB	1
57	212-2394-001	CABLE ASSY,USB,PORT W74/W165	2
58	212-2393-001	CABLE ASSY,ETHRNT EXTN,W73	1
60	212-2399-001	CABLE ASSY,EXPNSN PWR SHNL W80	1
61	212-2397-001	CABLE ASSY,S-VIDEO,IN/OUT W78	1
62	212-2382-001	CABLE ASSY,SATA PWR,W59/W60	2
63	212-2391-002	CABLE ASSY,SERIAL,EXT W71	1
67	212-1560-001	CABLE ASSY,ETHERNET W17	1
69	395-1433-001	SCREW,M4X8,FL HD HEX CUSTOM	2
70	212-2977-001	GASKET,HEX,STANDOFF	1
71	027-003	CABLE TIE,.625X3.50L,NYLON	1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.

3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM. (X Y)

4. -SXXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -SXX SERIES P/N.

5. *XX IN LBS* INDICATES TORQUE SPECIFICATION ON HARDWARE
ALL TORQUE TOLERANCES ARE $\pm 10\%$ OF NOMINAL VALUE
UNLESS OTHERWISE SPECIFIED.

6. BUILD PER 992-2120-001 AND TEST PER 907-2120-09*.

REV	ECN	DATE
P1	MOT RELEASED	05/03/12
A	CN033400ECN	08/15/12
B	CN035400ECN	09/17/12
C	CN039693ECN	22/13/13
D	CN046596ECN	09/20/13
E	CN050595ECN	11/24/14
F	CN053336ECN	03/04/14
G	CN054234ECN	04/16/14
H	CN056654ECN	09/23/14



3D VIEW

TABULATION				
PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-3408-501	ASSY.MODULE.HOST	212-3408-501FS	H	ASSY.MODULE.HOST SERVICE

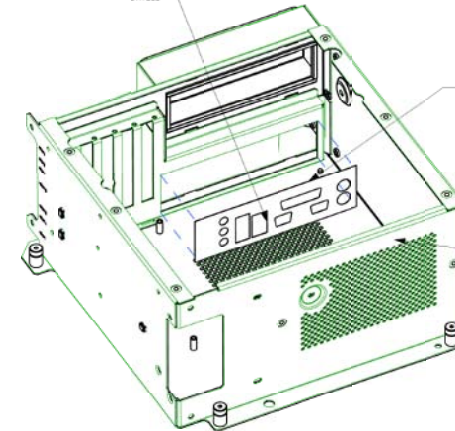
SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	B. LEE	DATE	09/26/11	THIS DOCUMENT CHANGES PREVIOUS DRAWING INFORMATION
DESIGN	D. CHOYANEK	DATE	09/26/11	WHICH SHALL NOT BE REPRODUCED OR IMPROVED TO EXIST WITHOUT THE WRITTEN PERMISSION OF ALCON
APPROVED	J. FOSTER	DATE	09/27/11	USE ANY OTHER PARTS WITHOUT WRITTEN PERMISSION OF ALCON
PRINT REVISION	2/23/2007			
POMLINK MODEL ATTRIBUTES	NAME: 212-3408-XXXX	VERSION: 4.3		



DESCRIPTION: ASSY_MODULE_HOST
SIZE: B DRAWING NUMBER: 212-3408-XXXX REV: H
SCALE: 1:1 SHEET 1 OF 45

REMOVE 2 TABS FROM I/O SHIELD



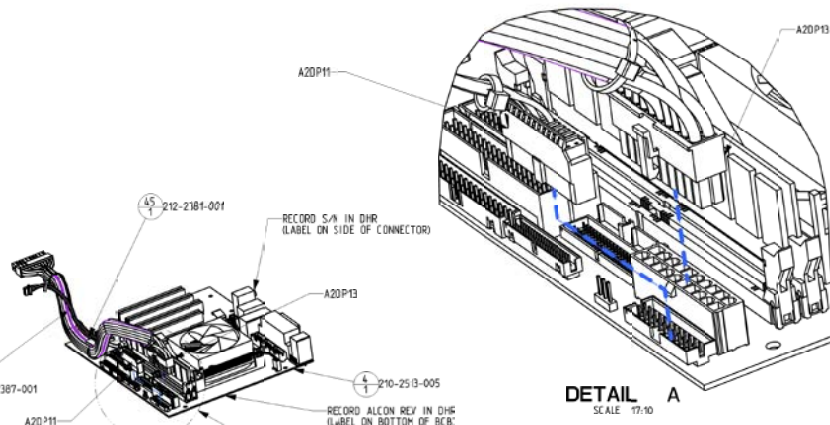
PART OF 210-2513-005

212-1593-001

STEP 1

SNAP I/O SHIELD INTO PLACE

SIZE: B	DRAWING NUMBER: 212-3408-XXXX	REV: H
SCALE: 1:1	SHEET 2 OF 45	

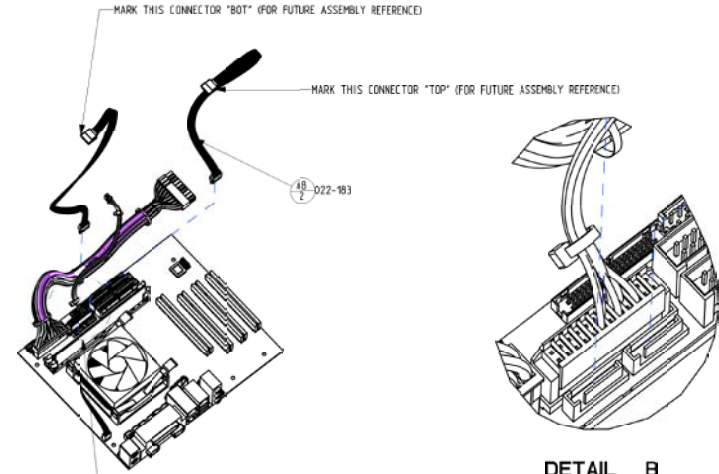


DETAIL A
SCALE: 17:10

SEE DETAIL A

STEP 2

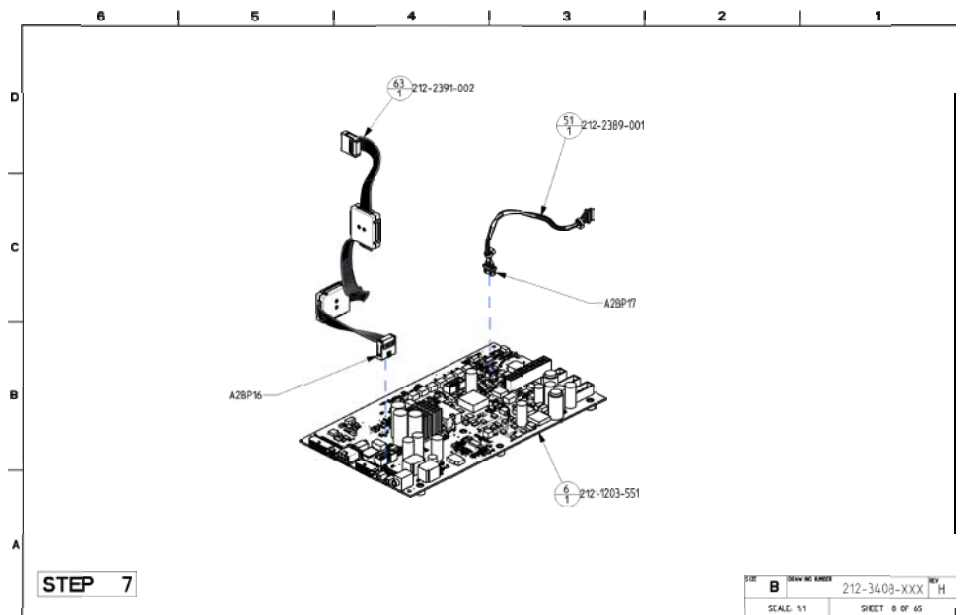
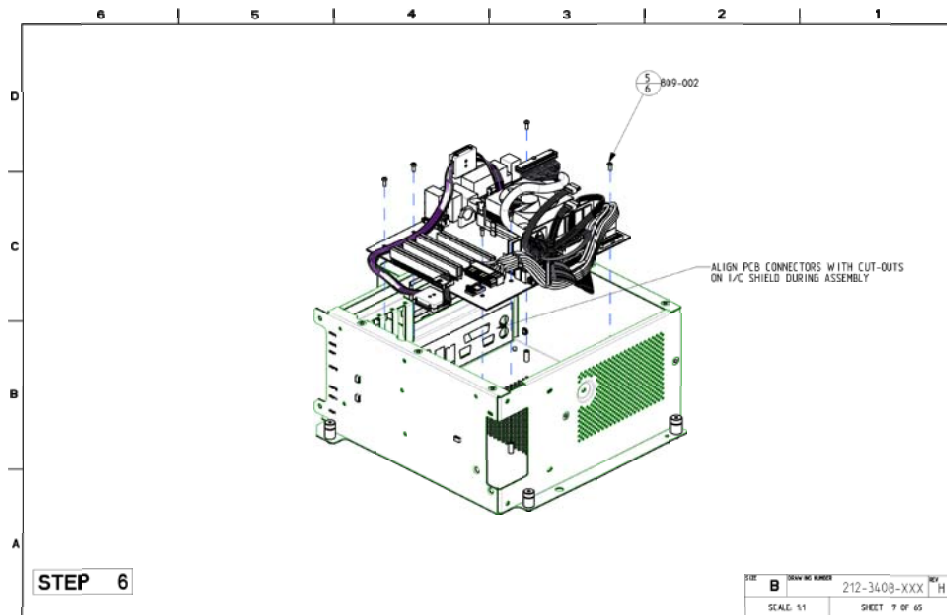
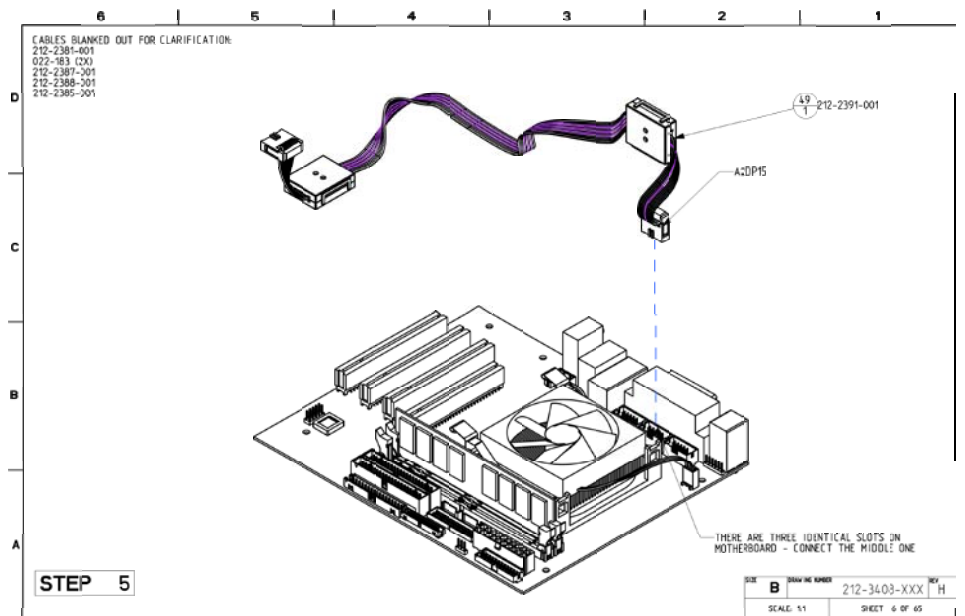
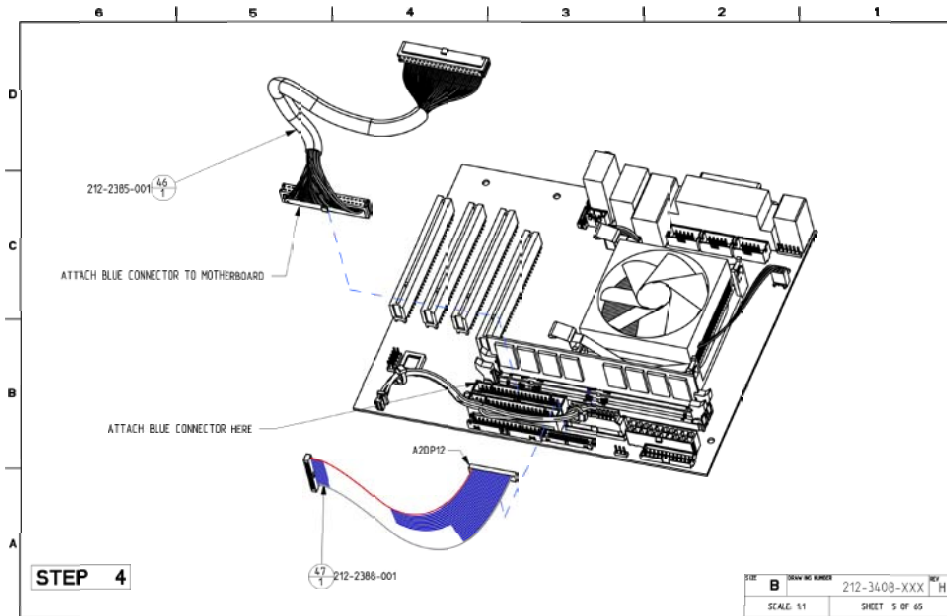
SIZE: B	DRAWING NUMBER: 212-3408-XXXX	REV: H
SCALE: 1:1	SHEET 3 OF 45	

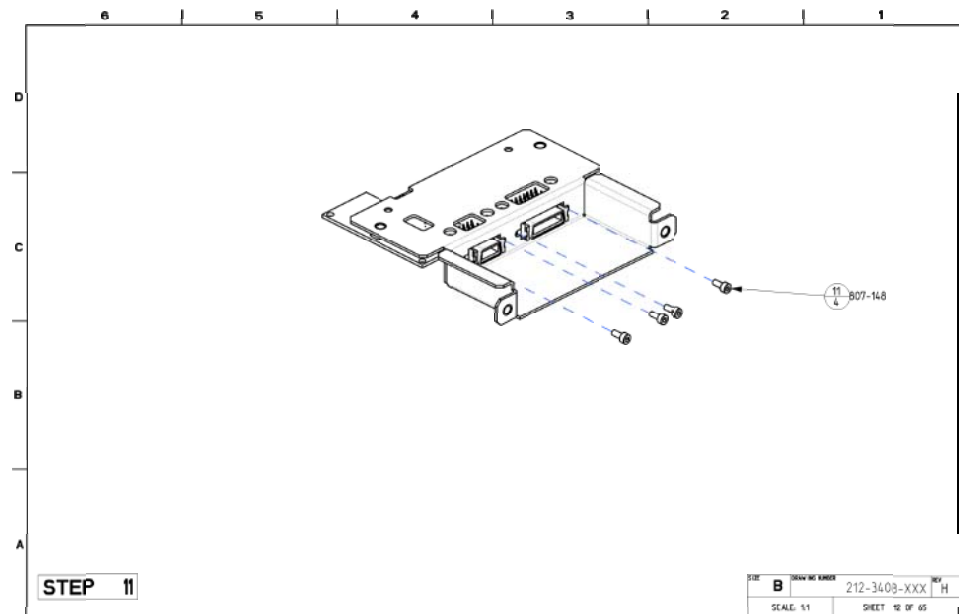
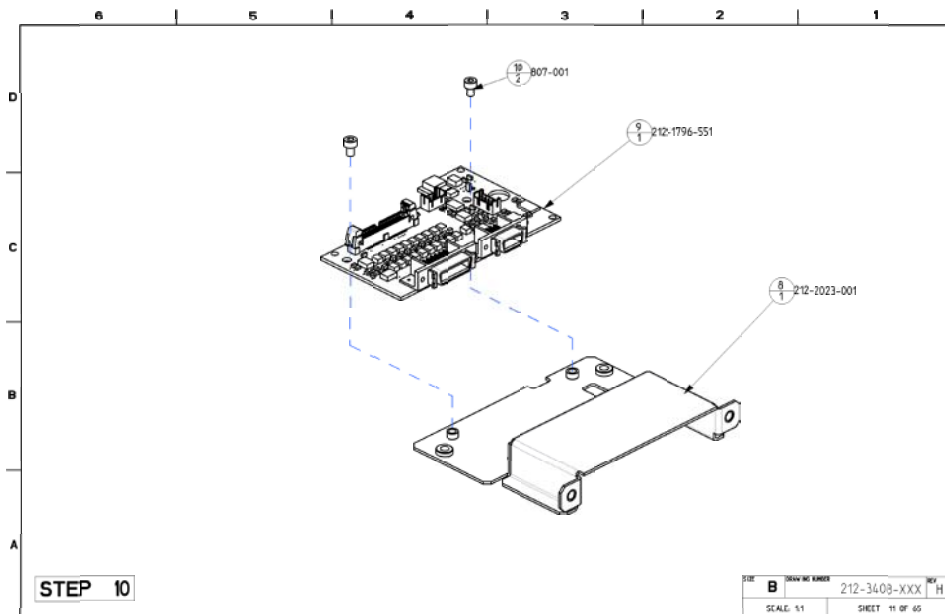
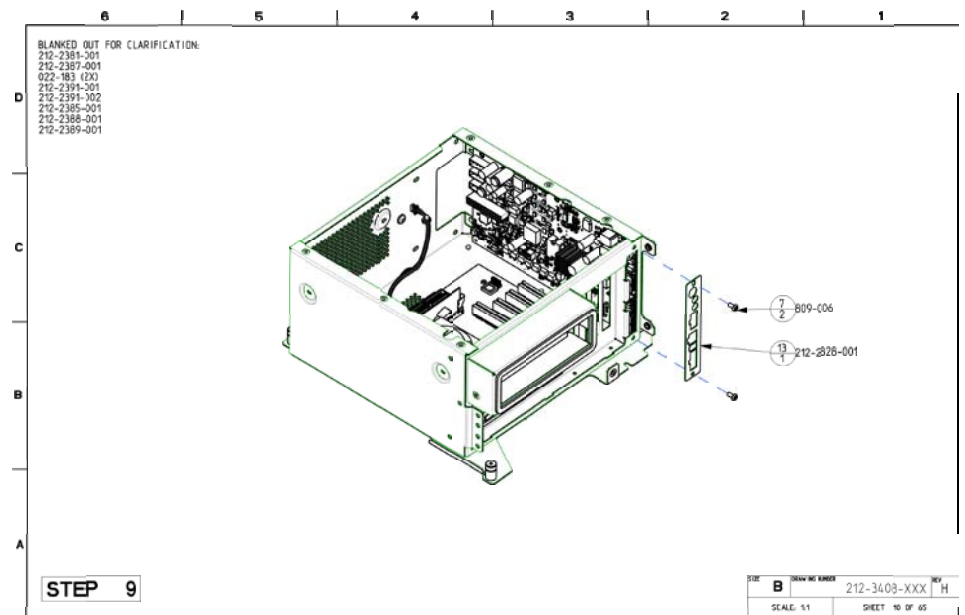
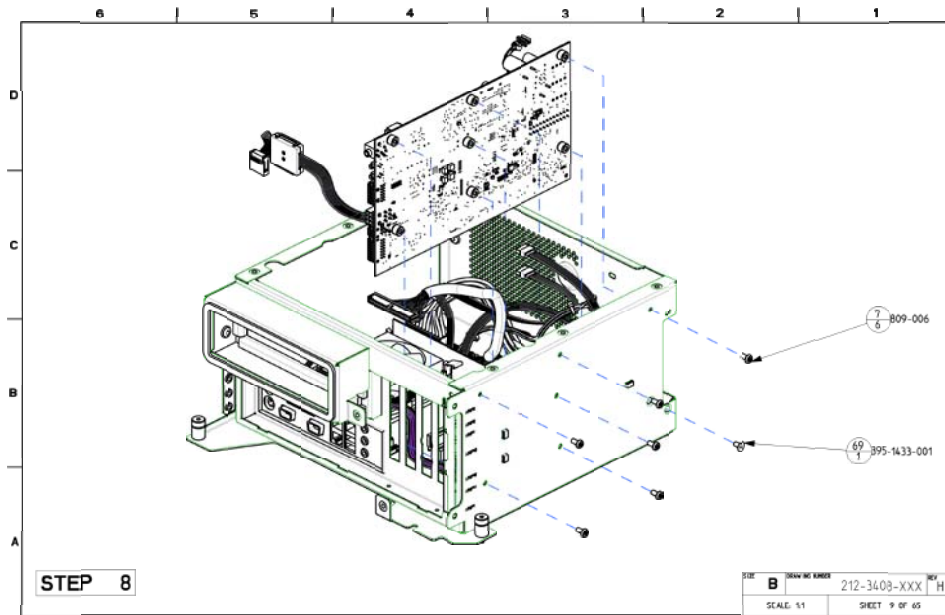


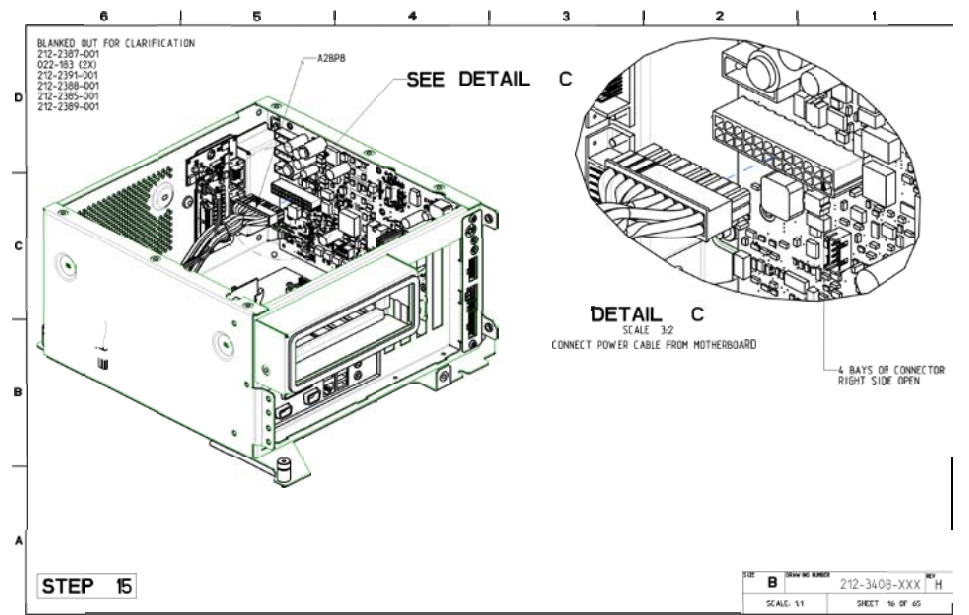
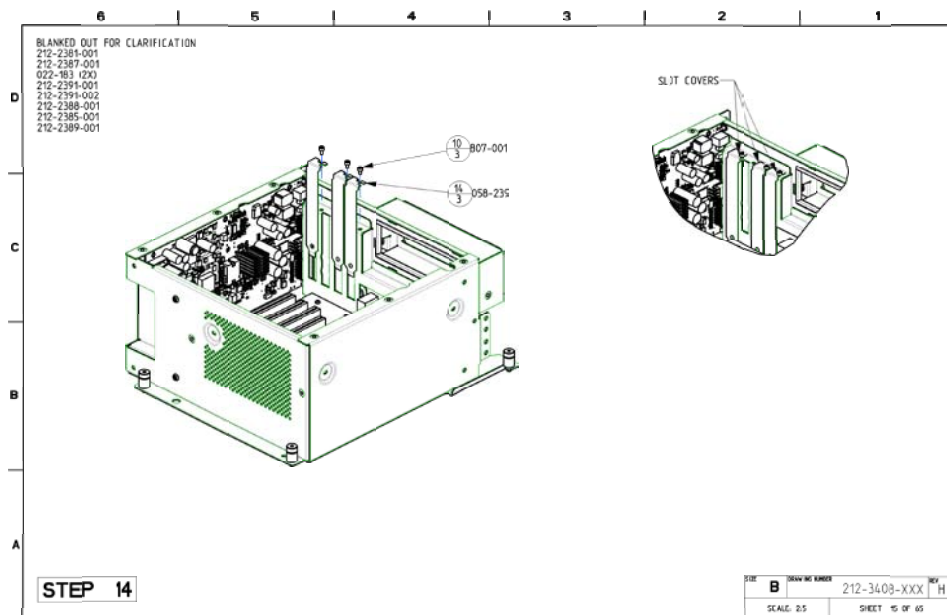
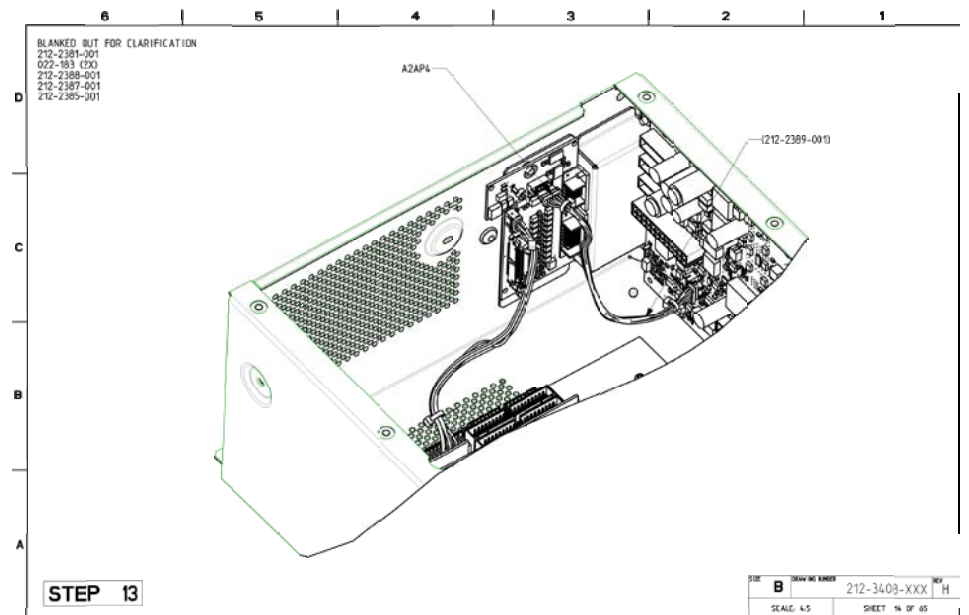
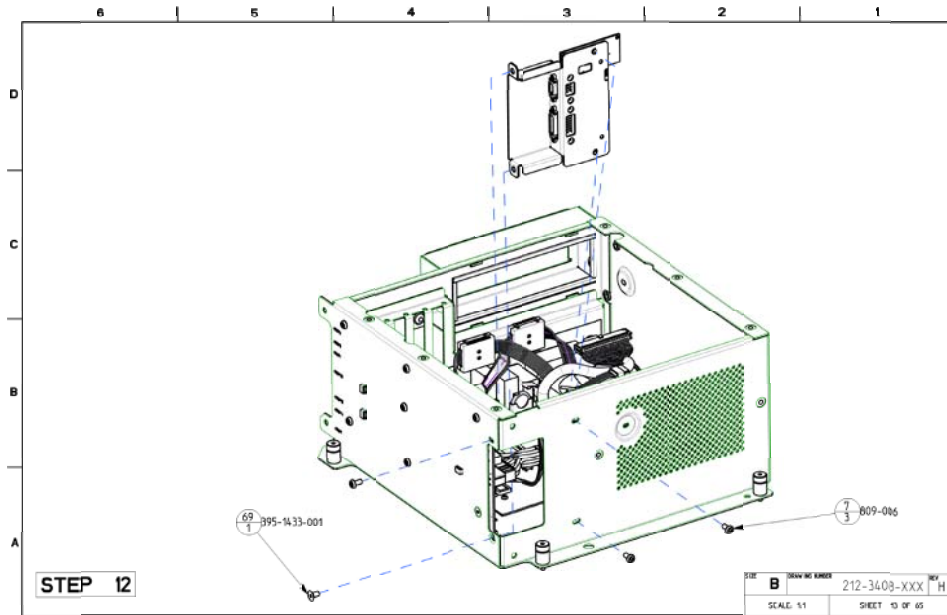
DETAIL B
SCALE: 2:1

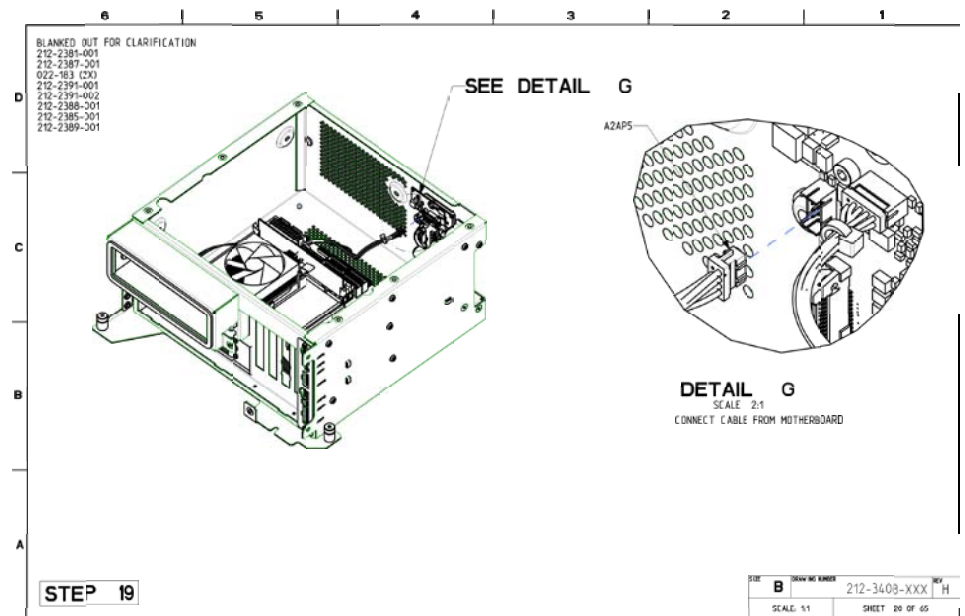
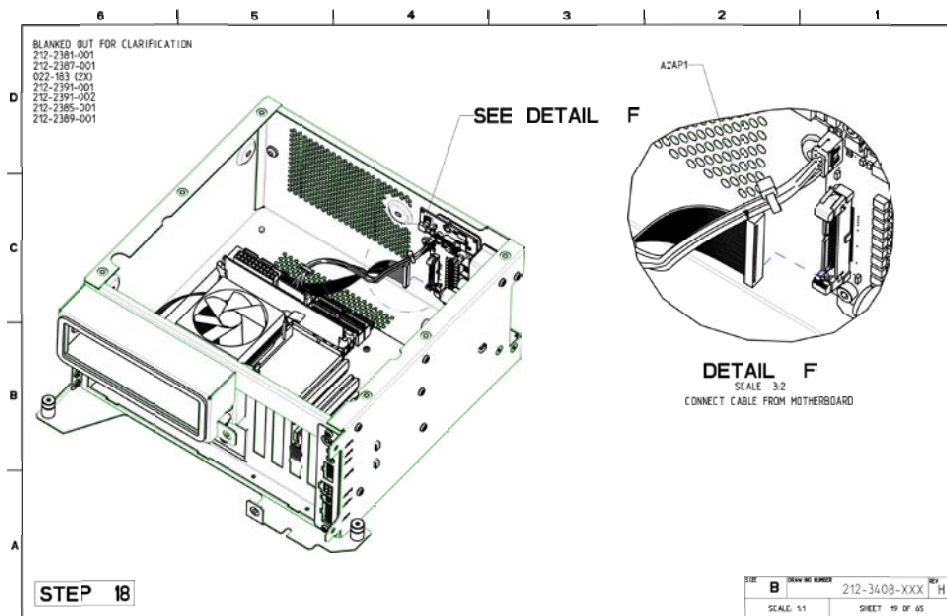
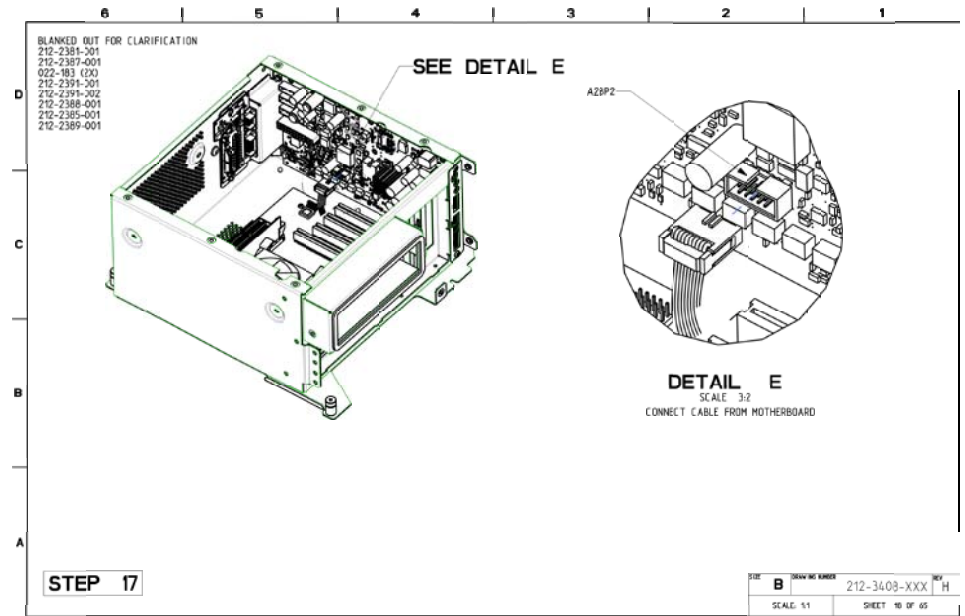
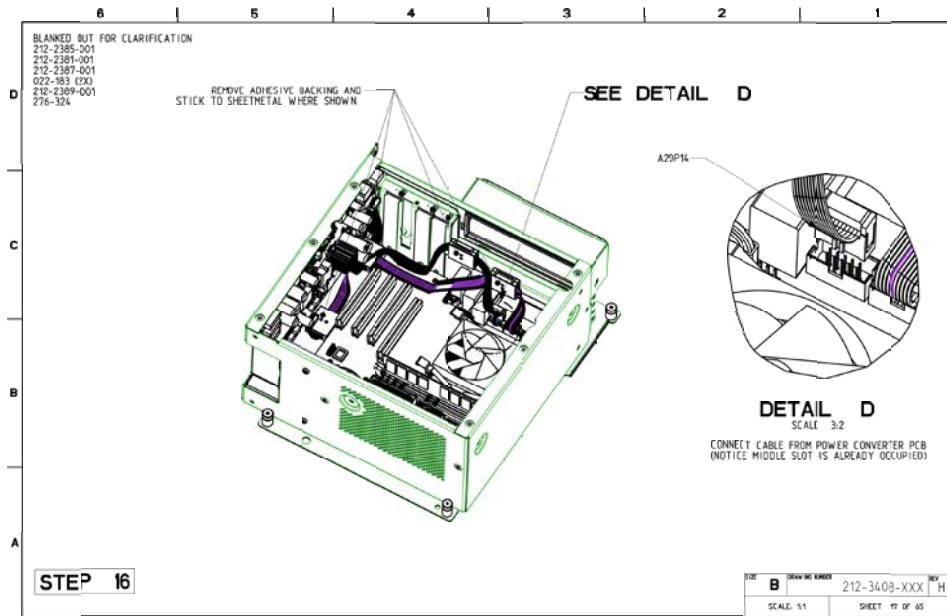
STEP 3

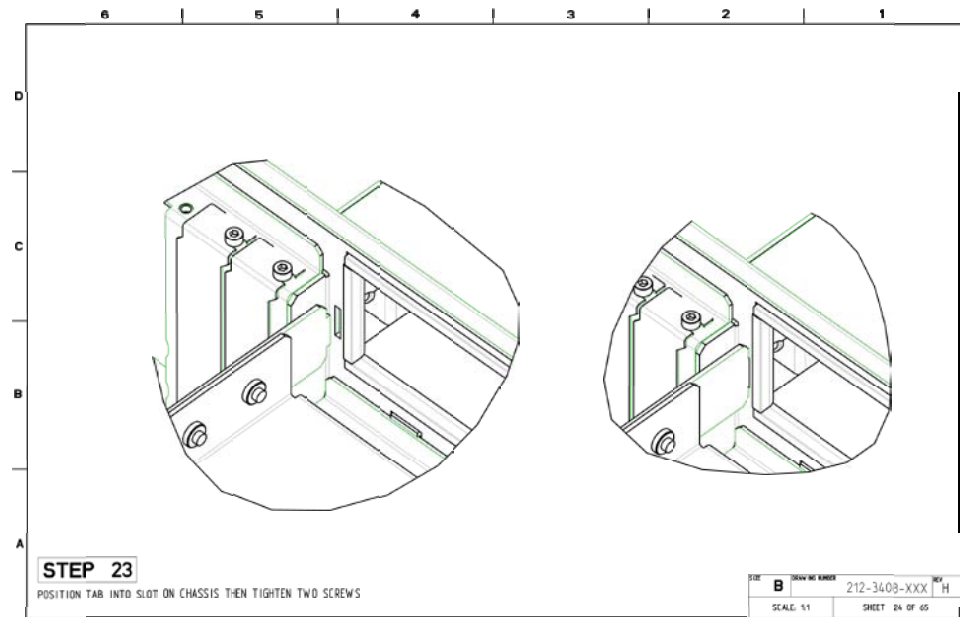
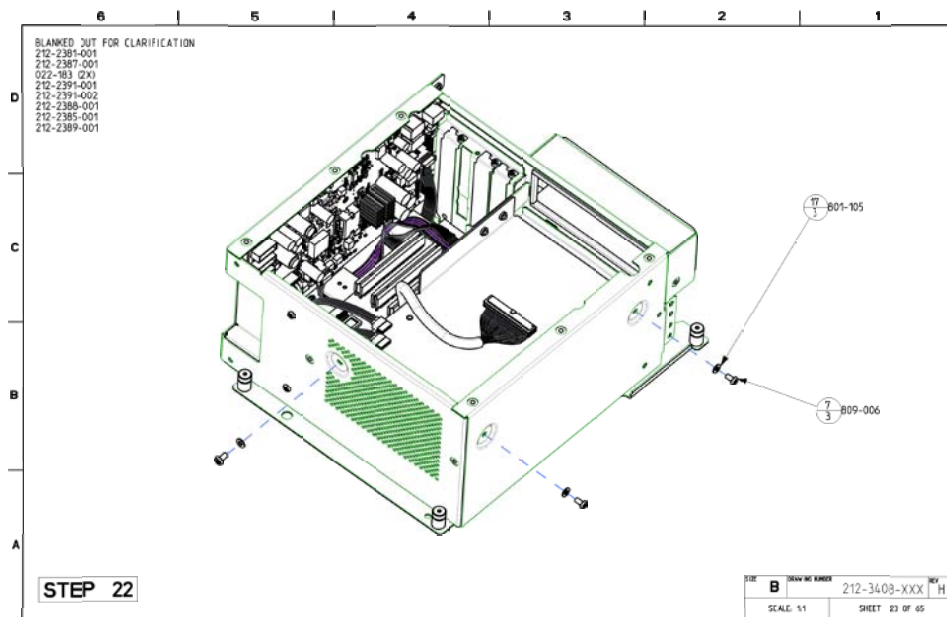
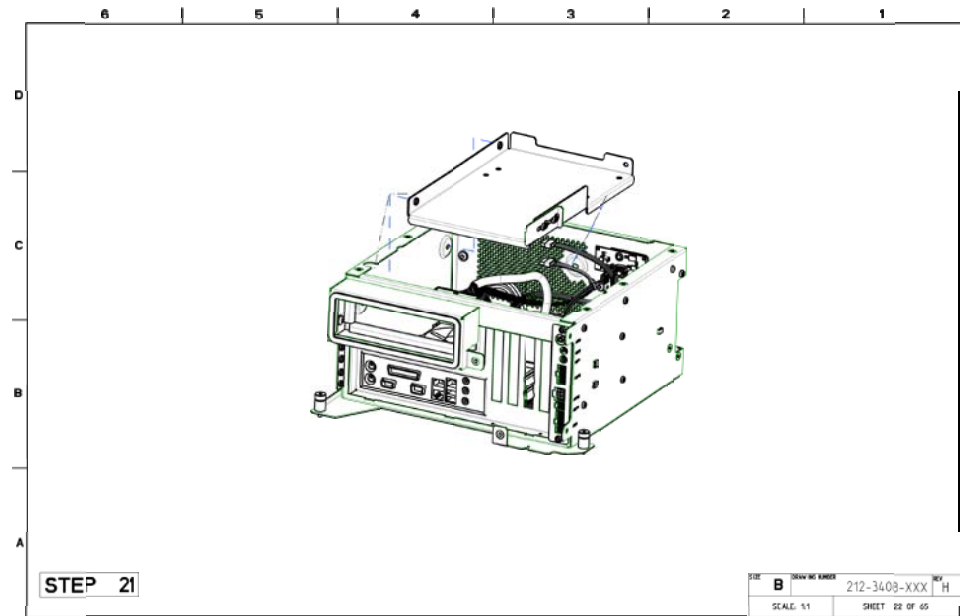
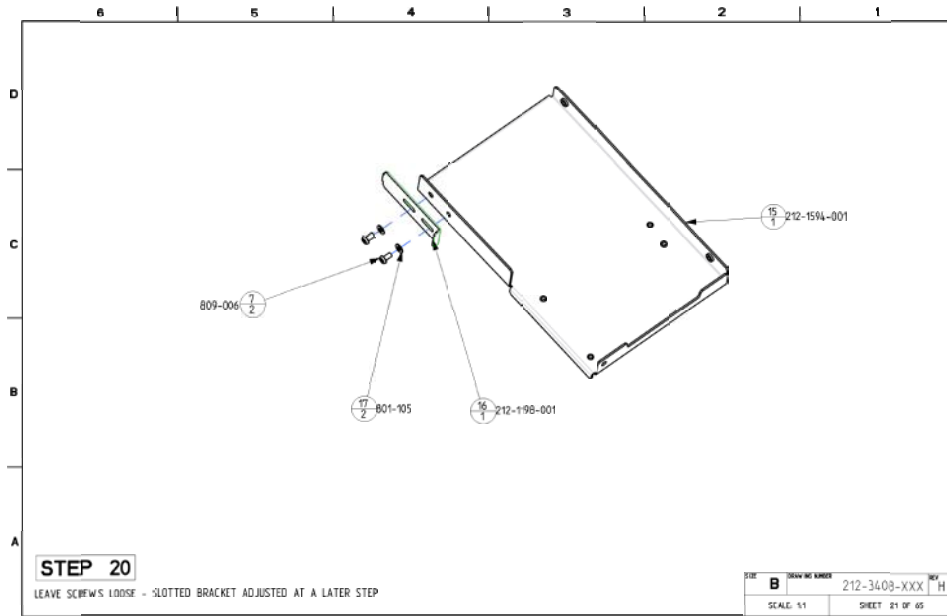
SIZE: B	DRAWING NUMBER: 212-3408-XXXX	REV: H
SCALE: 1:1	SHEET 4 OF 45	

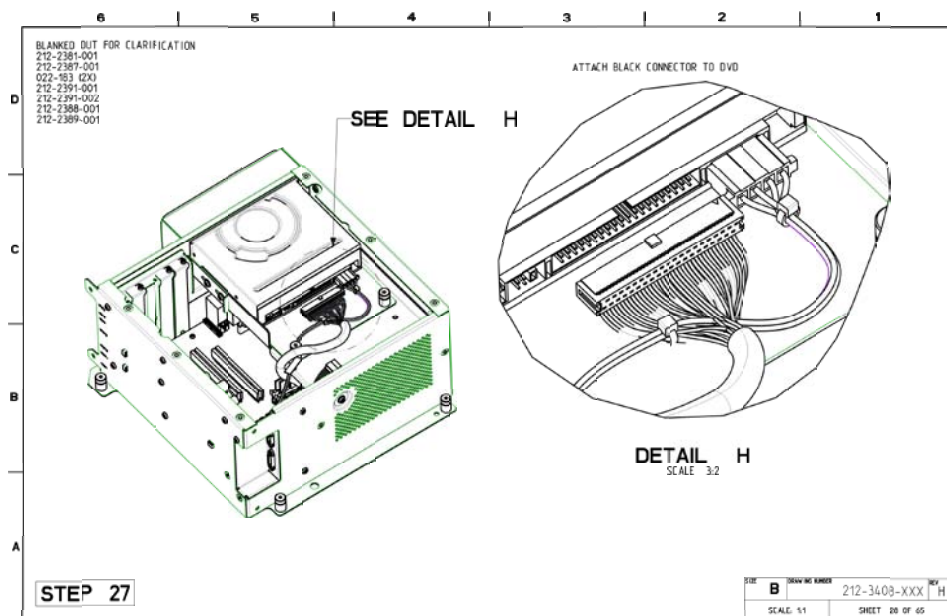
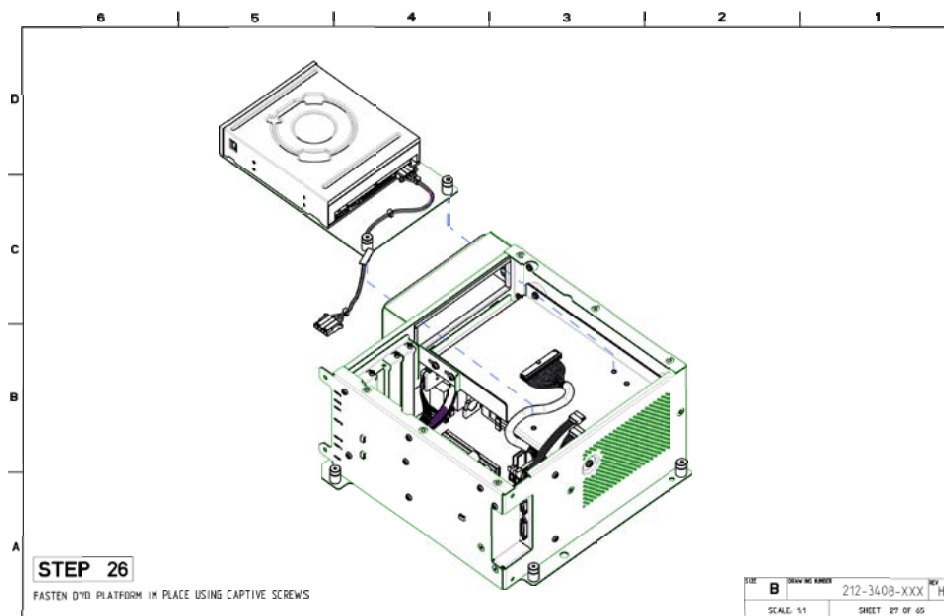
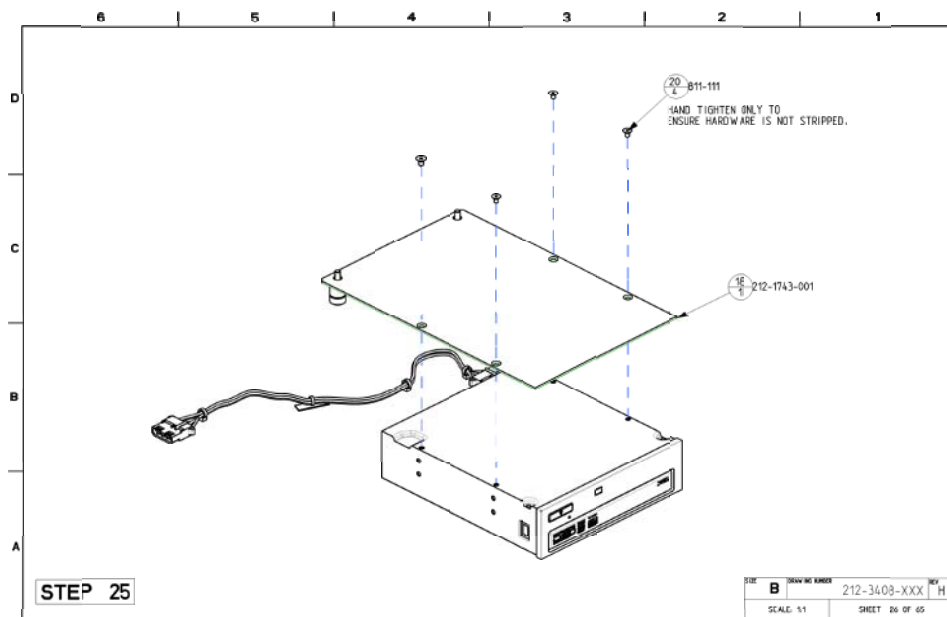
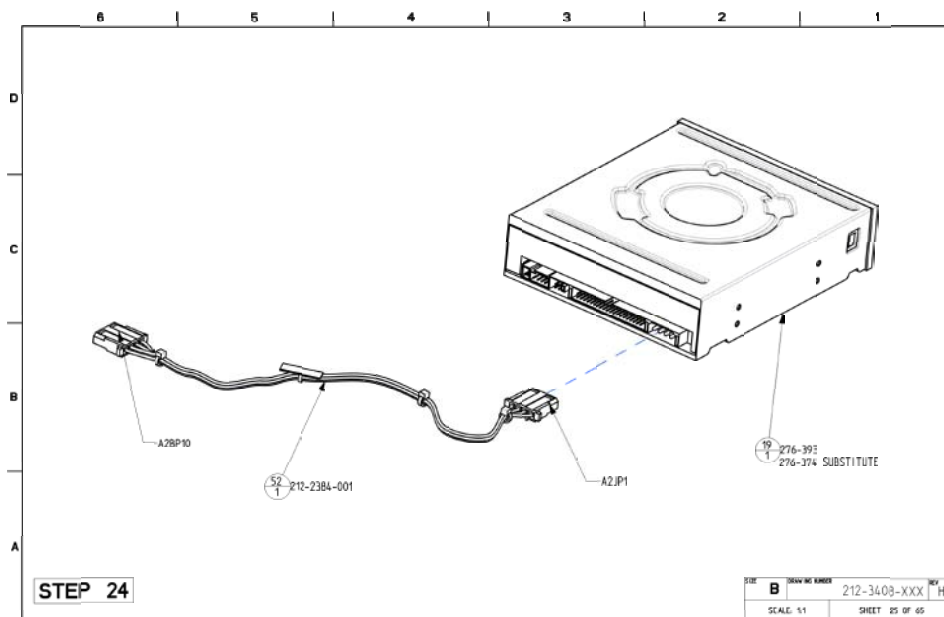




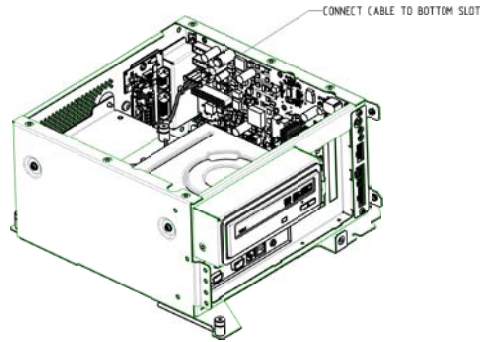






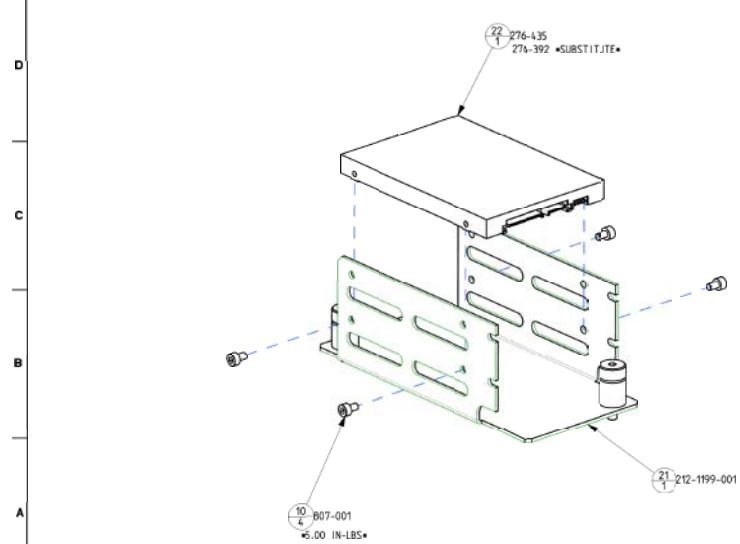


BLANKED OUT FOR CLARIFICATION
212-2385-001
212-2387-001
022-183 (CX)
212-2385-001
212-2388-001
212-2389-001



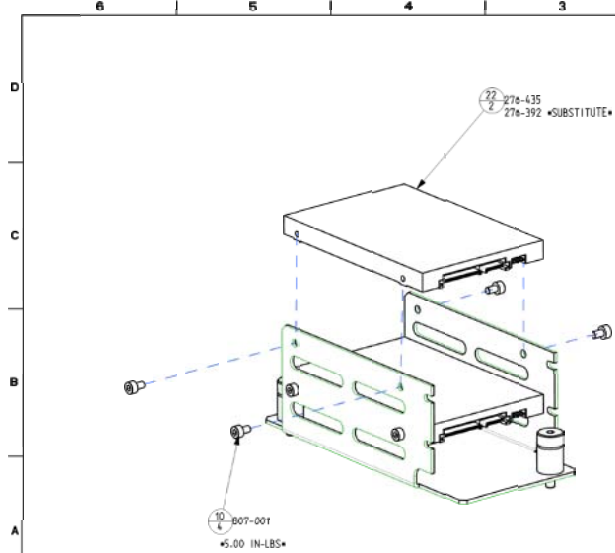
STEP 28

SIZE B DRAWING NUMBER 212-3408-XXX REV H
SCALE: 1:1 SHEET 29 OF 65



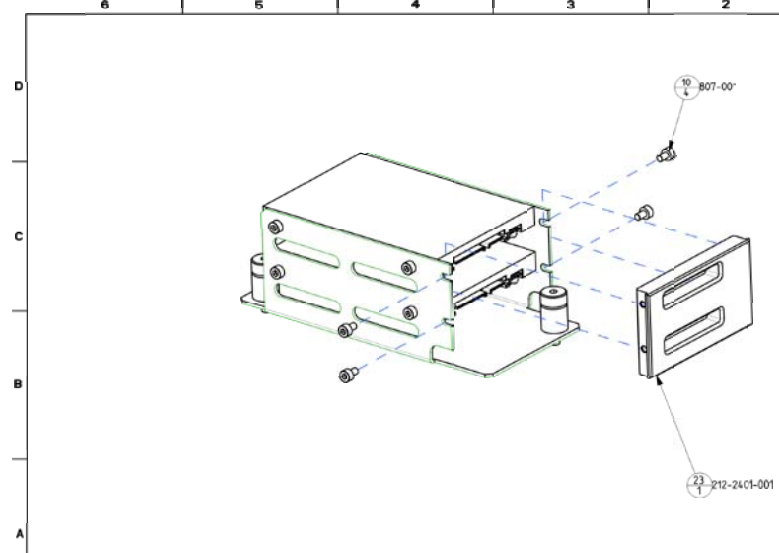
STEP 29

SIZE B DRAWING NUMBER 212-3408-XXX REV H
SCALE: 1:1 SHEET 30 OF 65



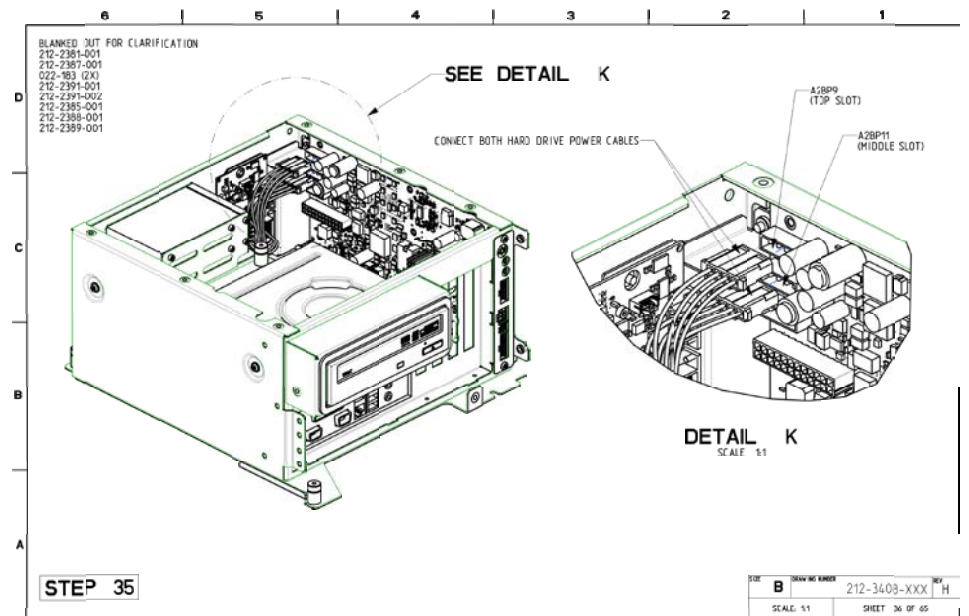
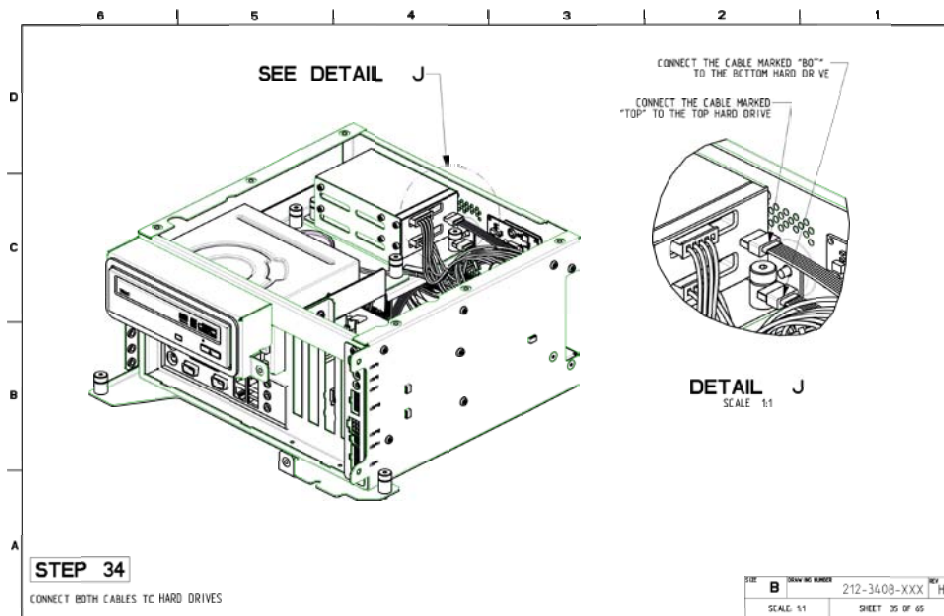
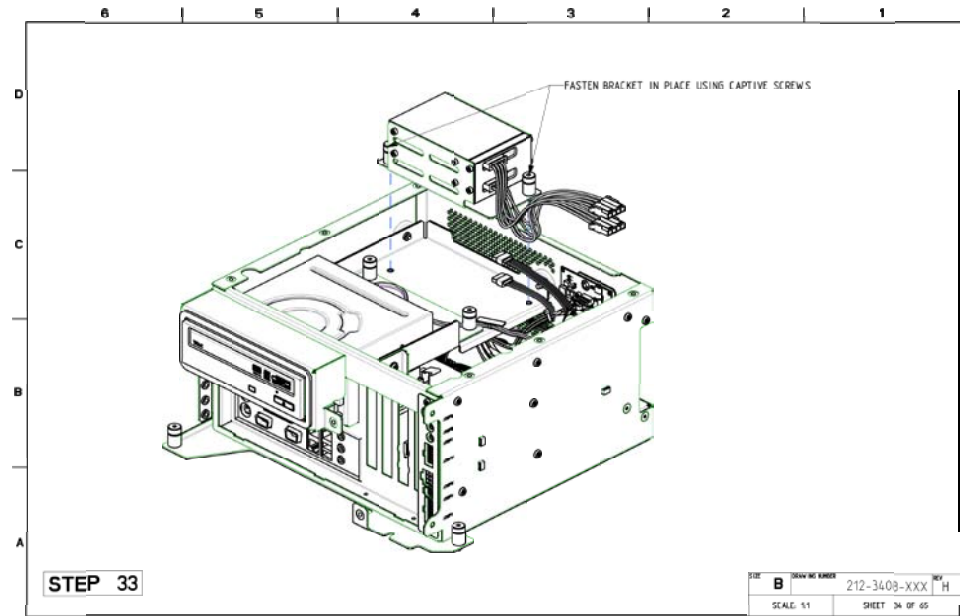
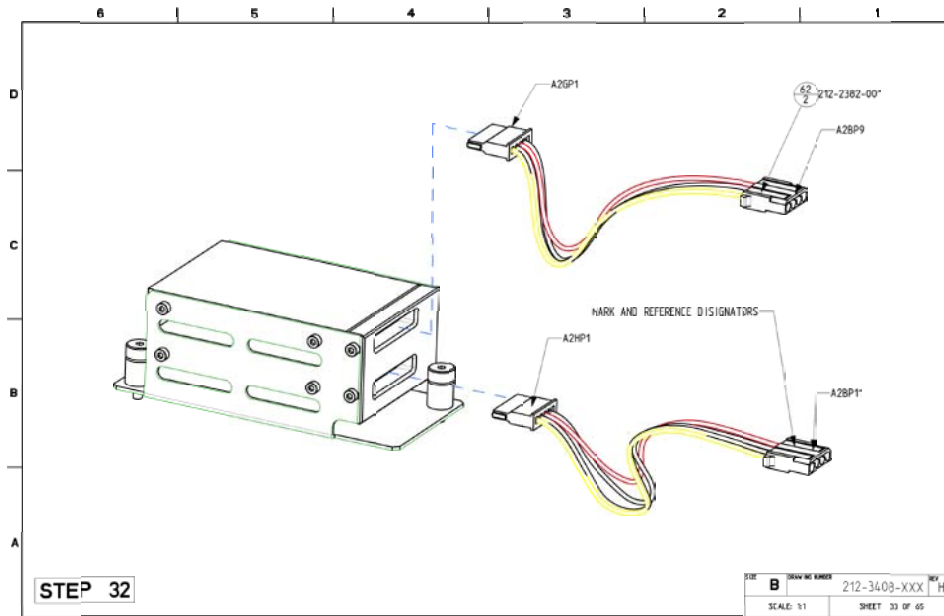
STEP 30

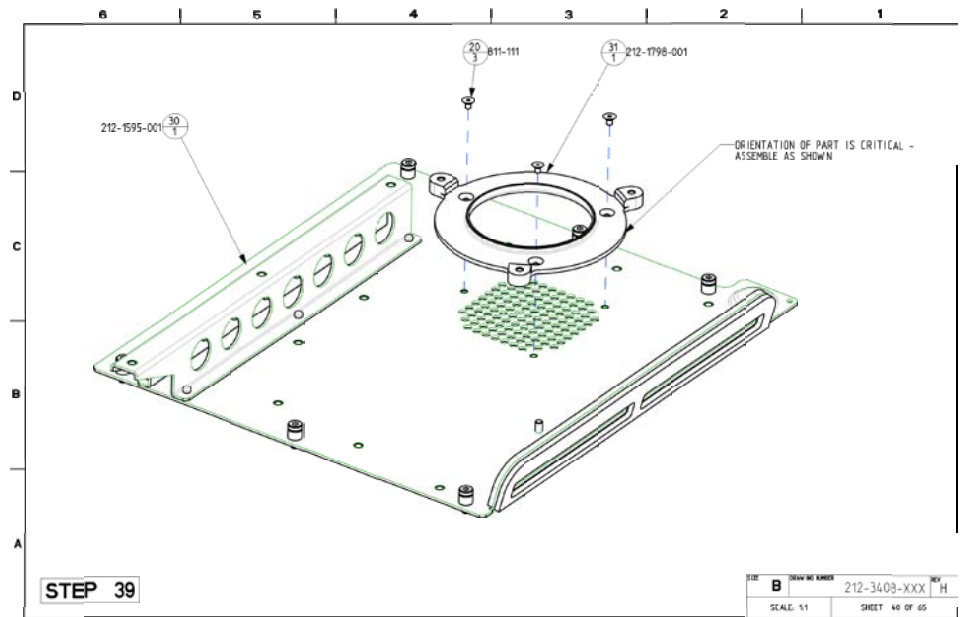
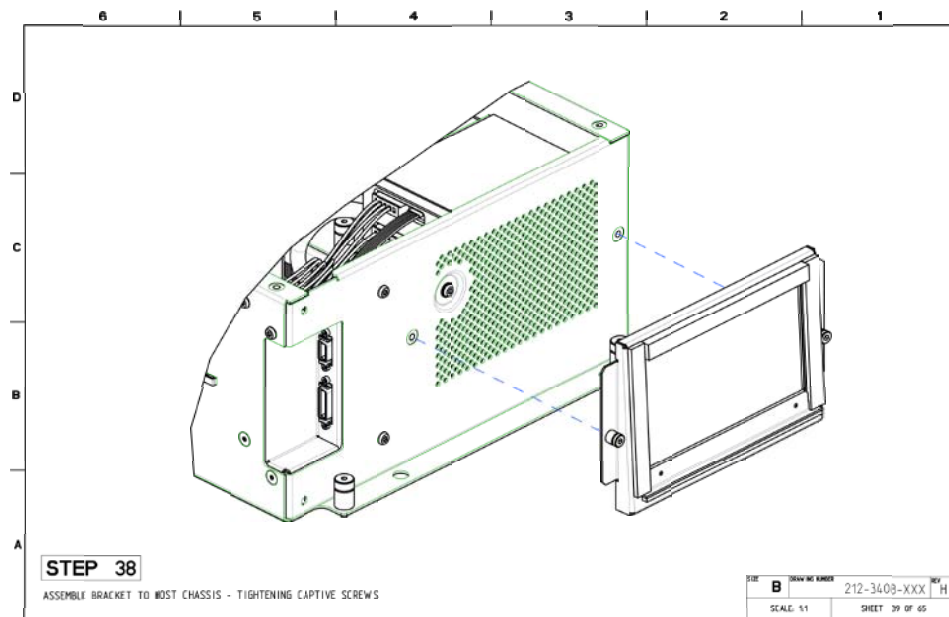
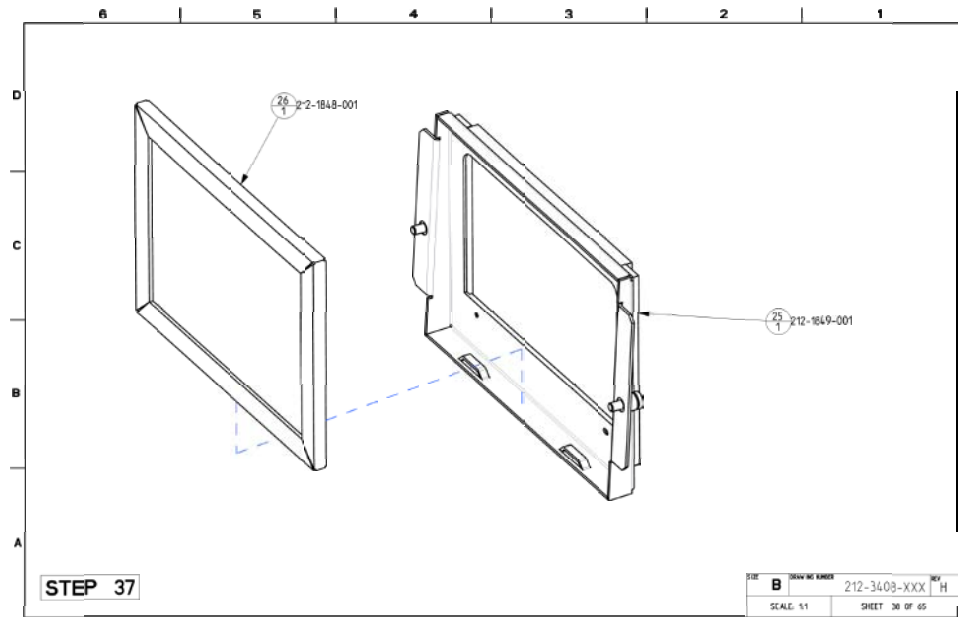
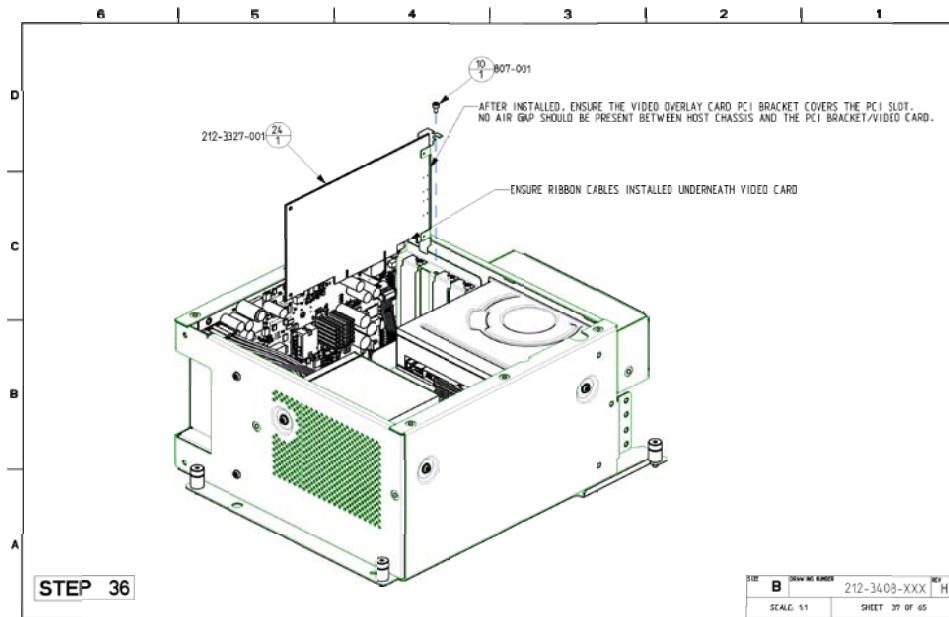
SIZE B DRAWING NUMBER 212-3408-XXX REV H
SCALE: 1:1 SHEET 31 OF 65

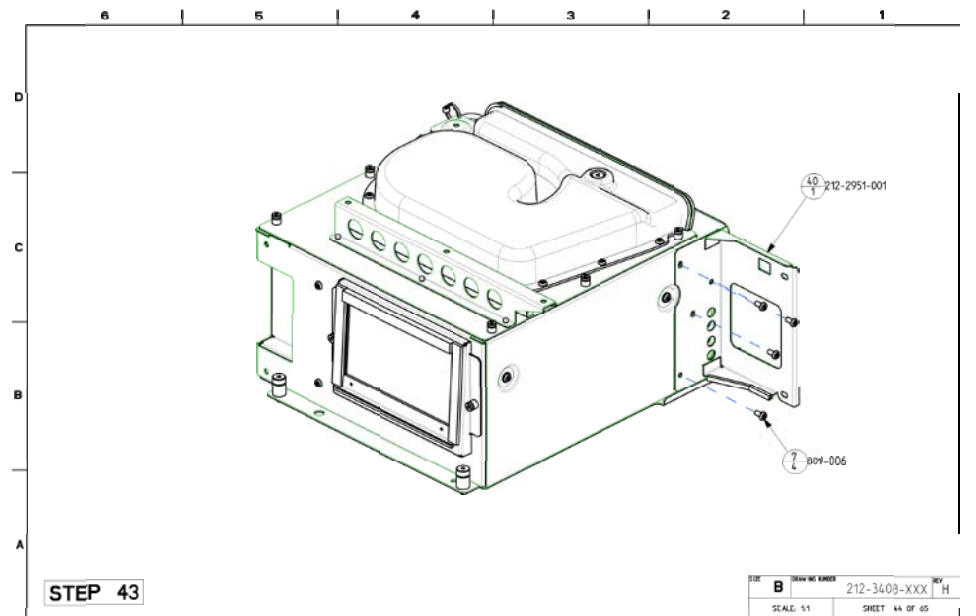
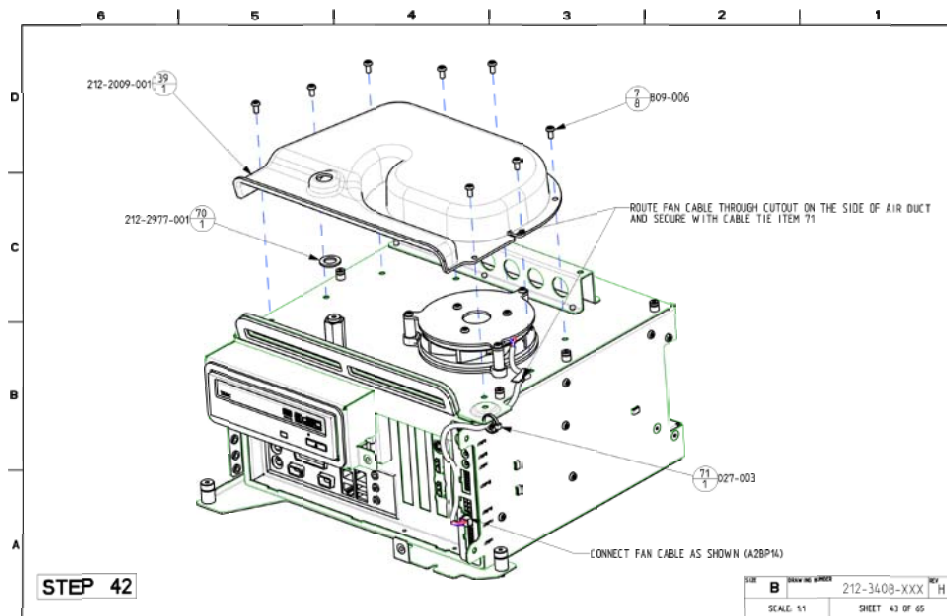
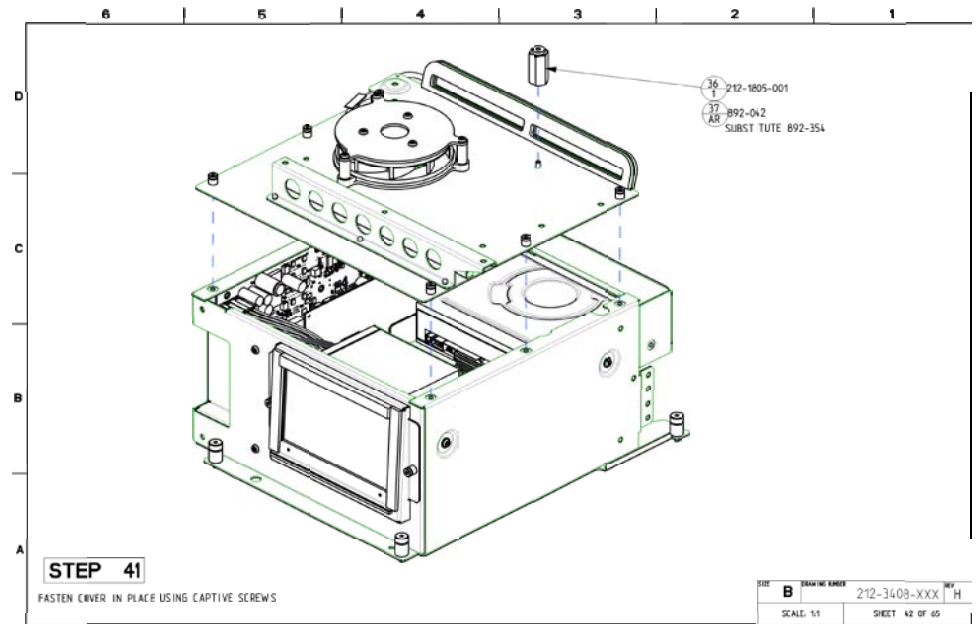
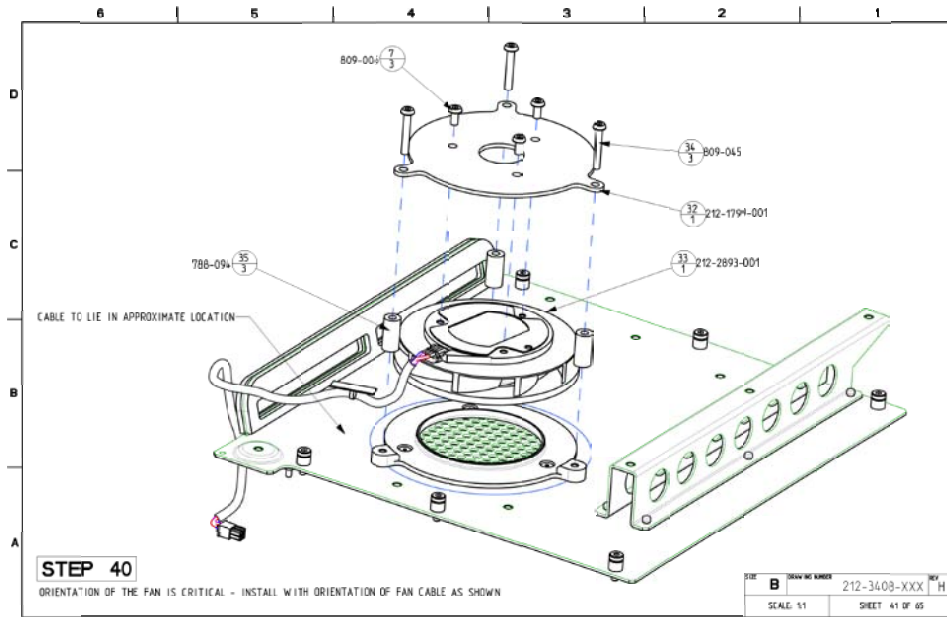


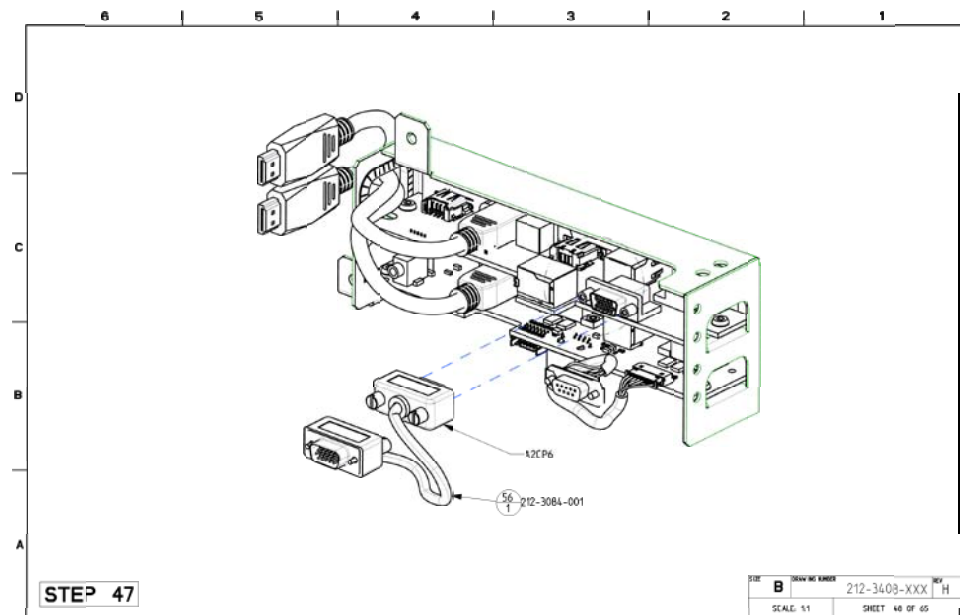
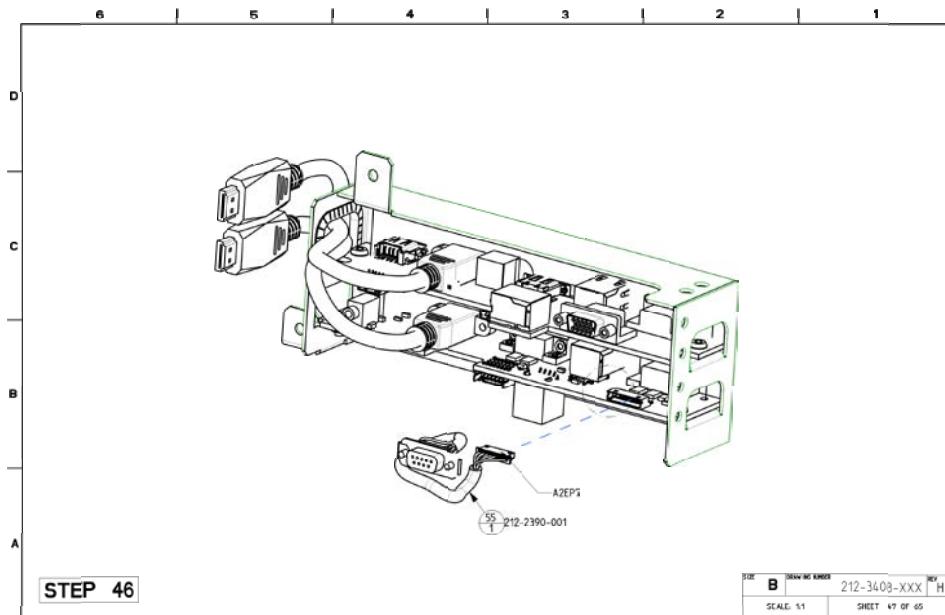
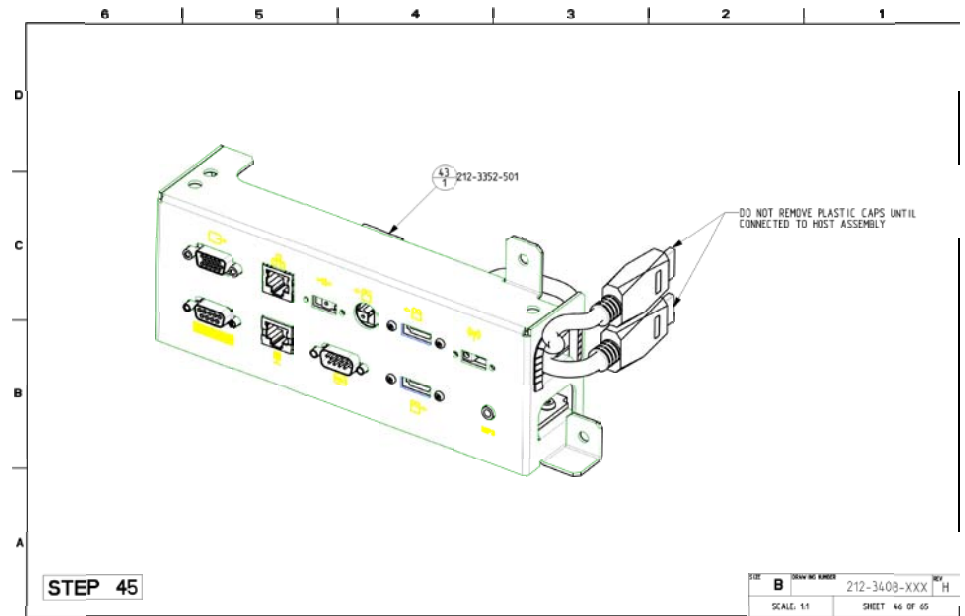
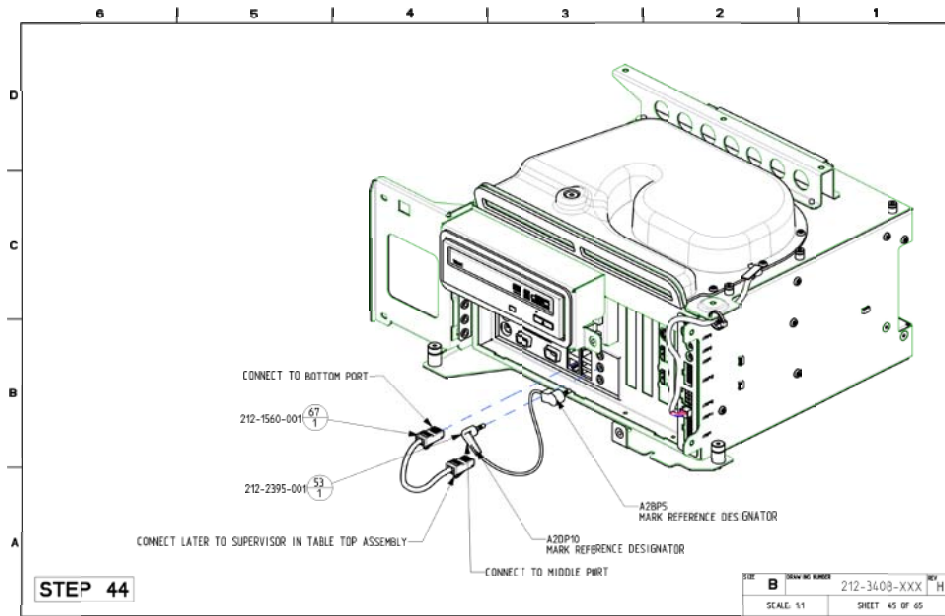
STEP 31

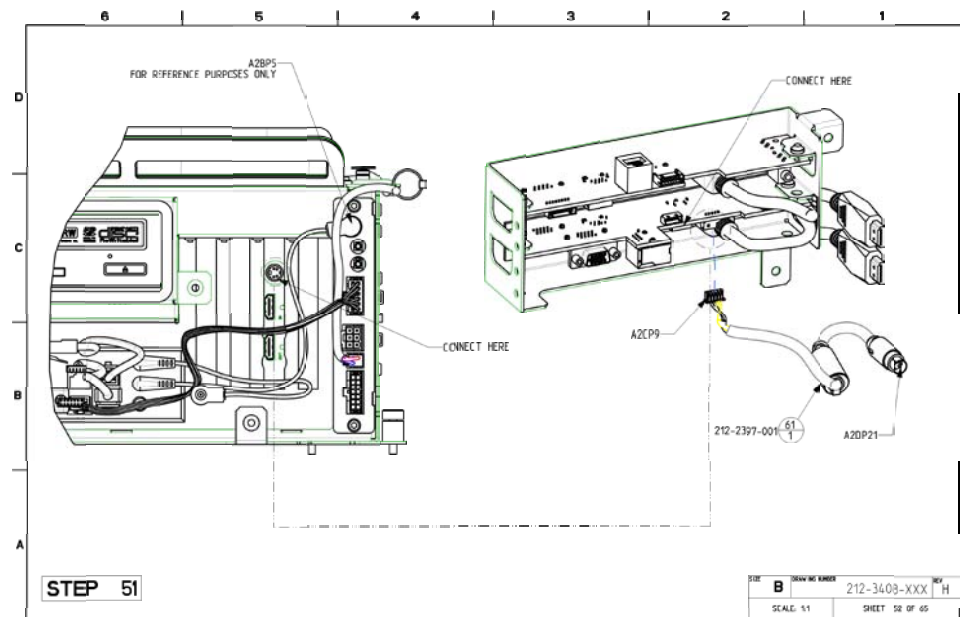
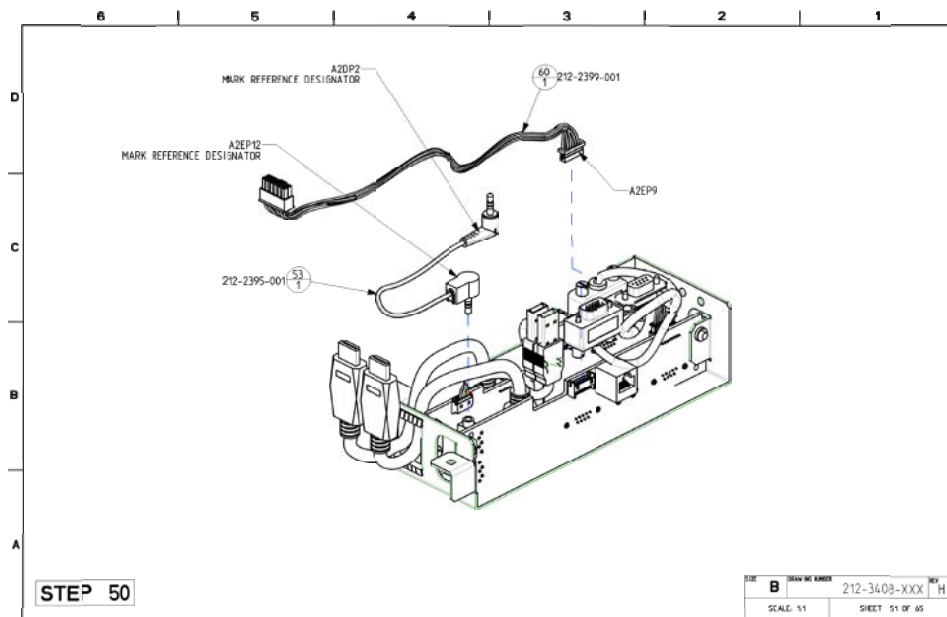
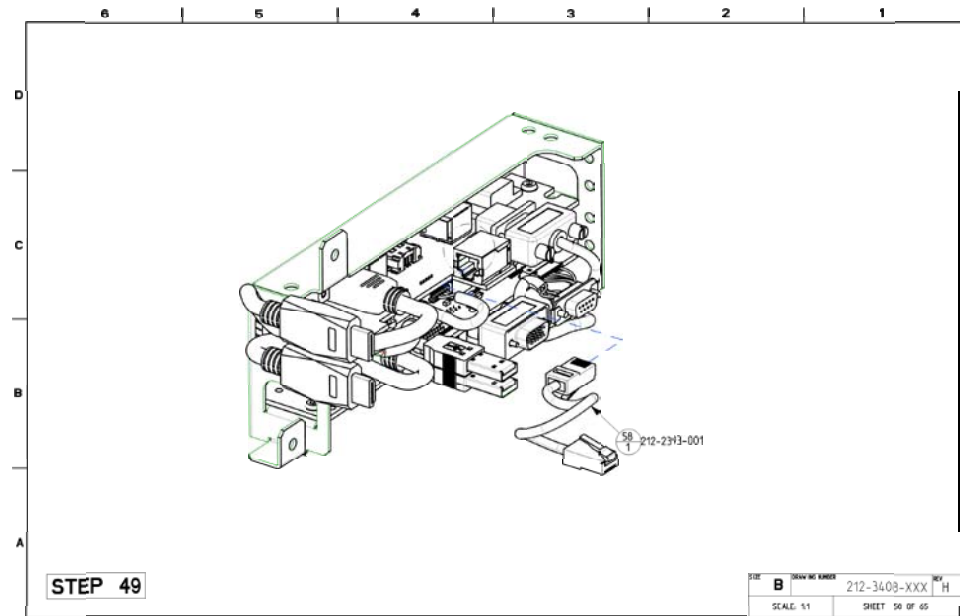
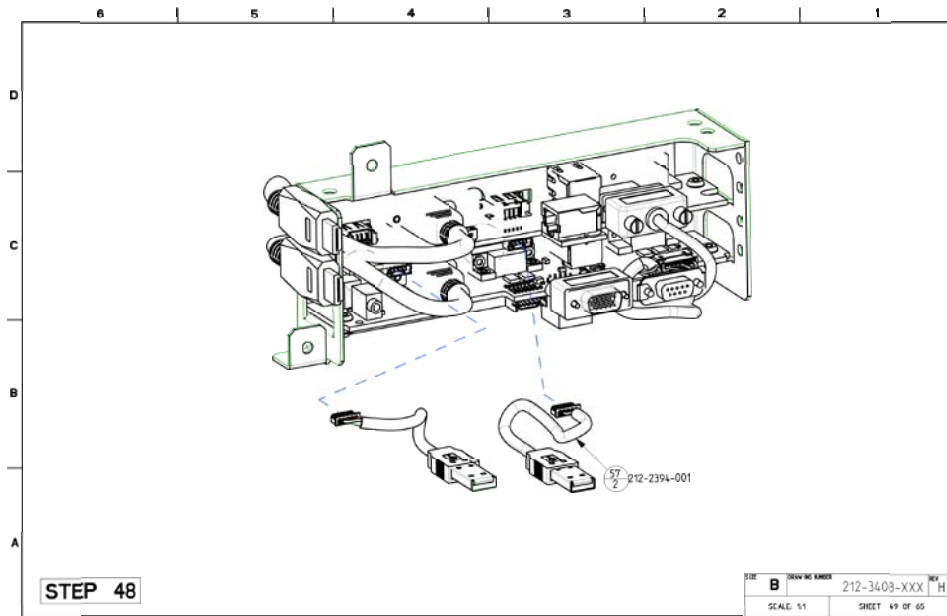
SIZE B DRAWING NUMBER 212-3408-XXX REV H
SCALE: 1:1 SHEET 32 OF 65

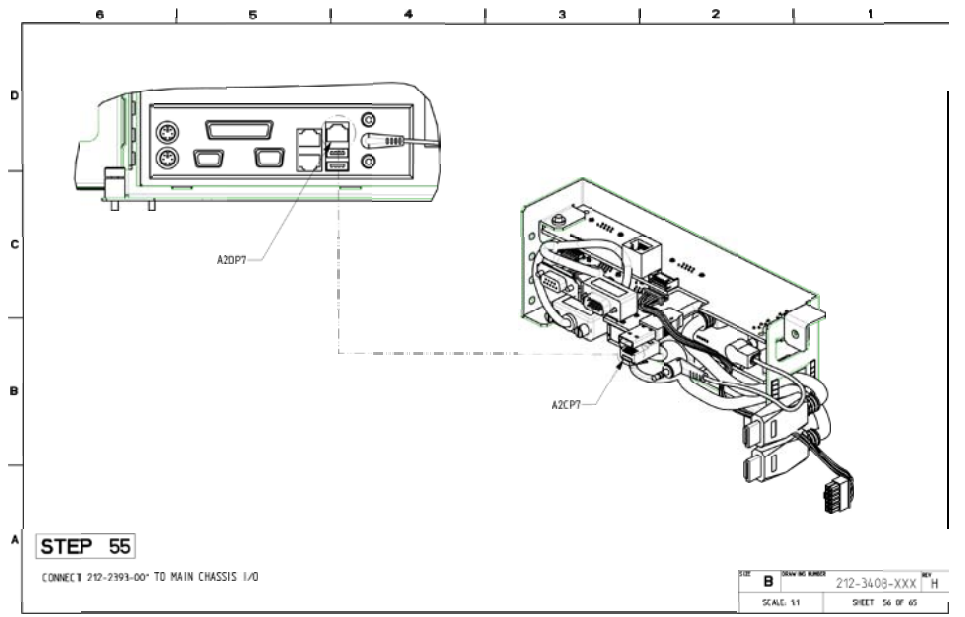
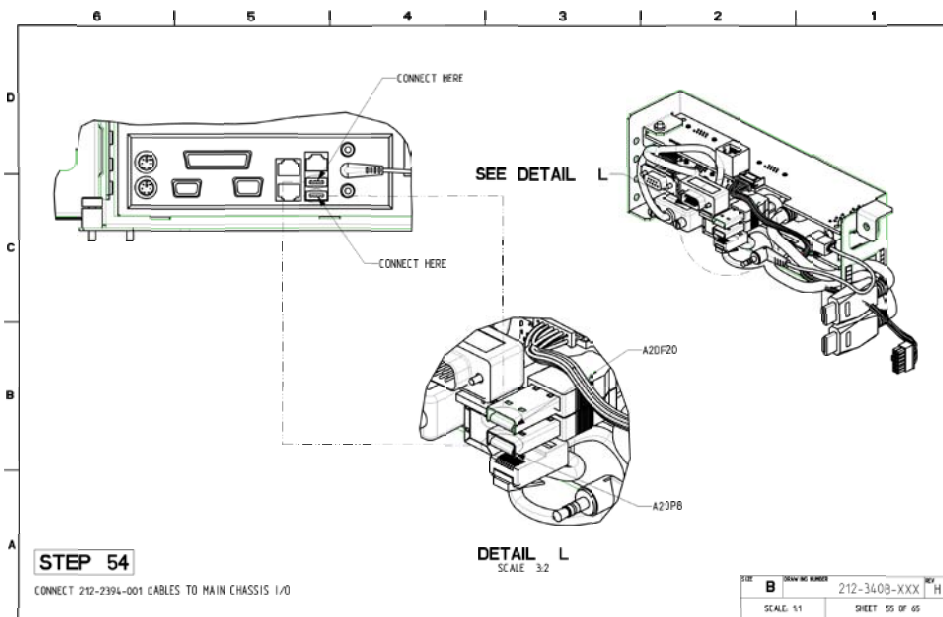
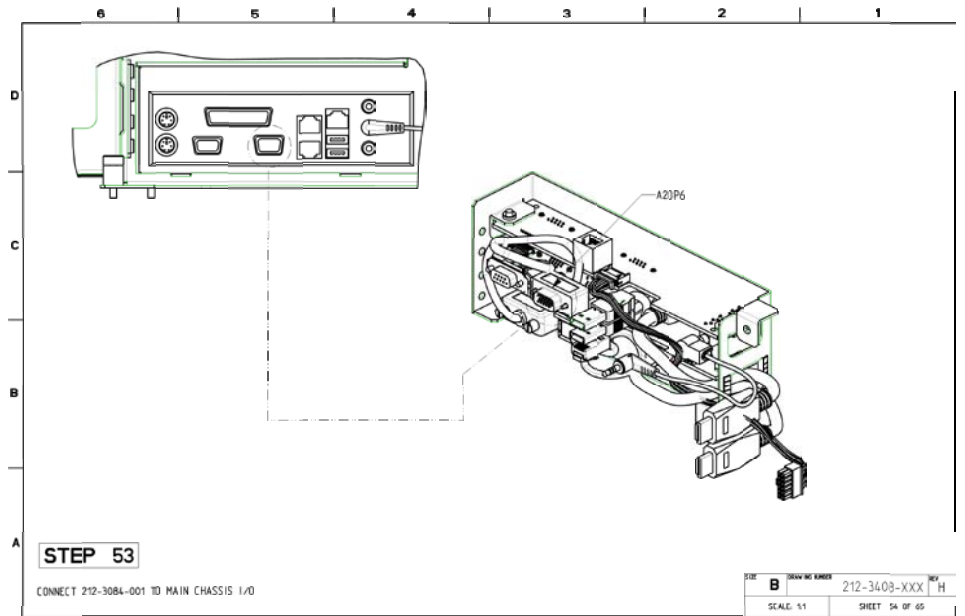
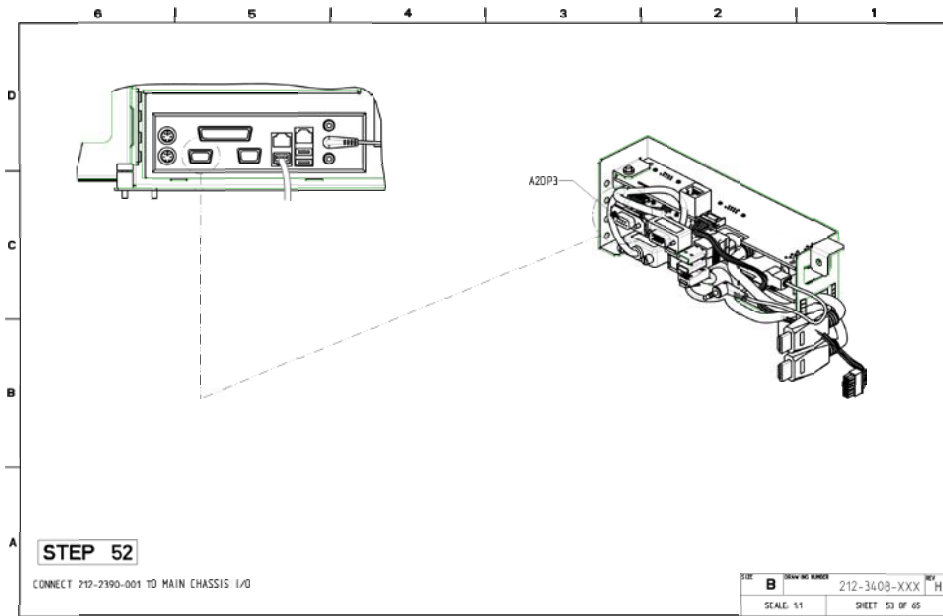


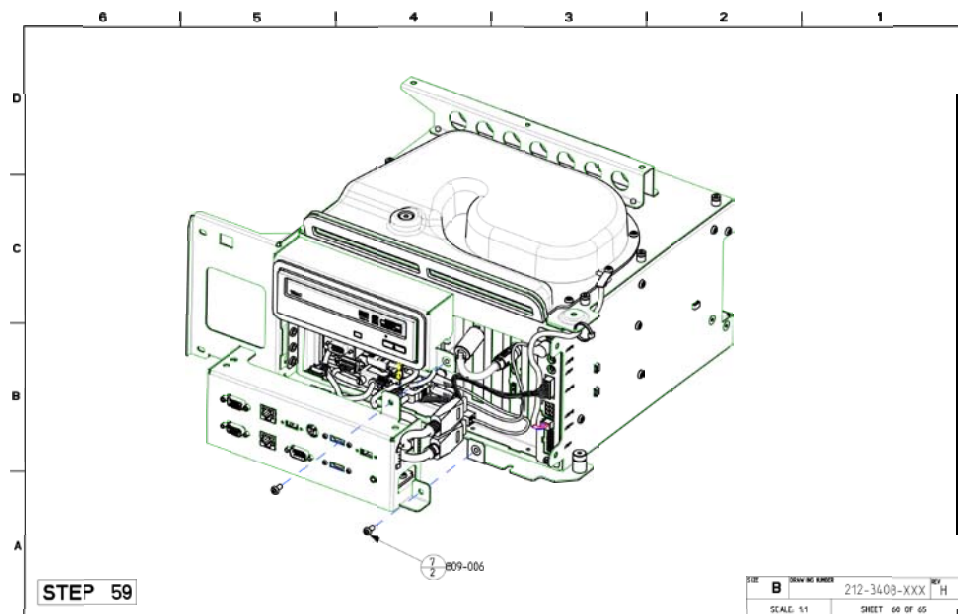
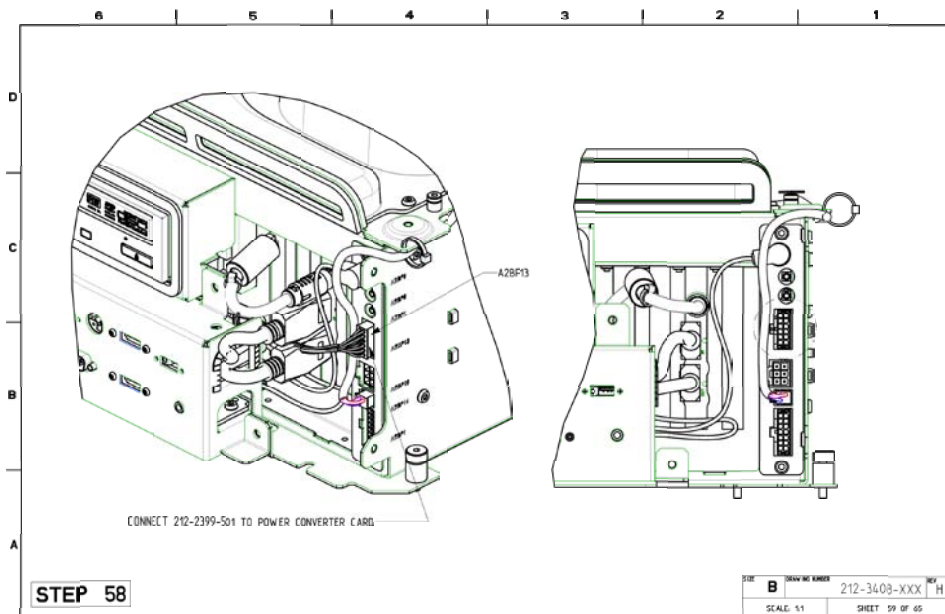
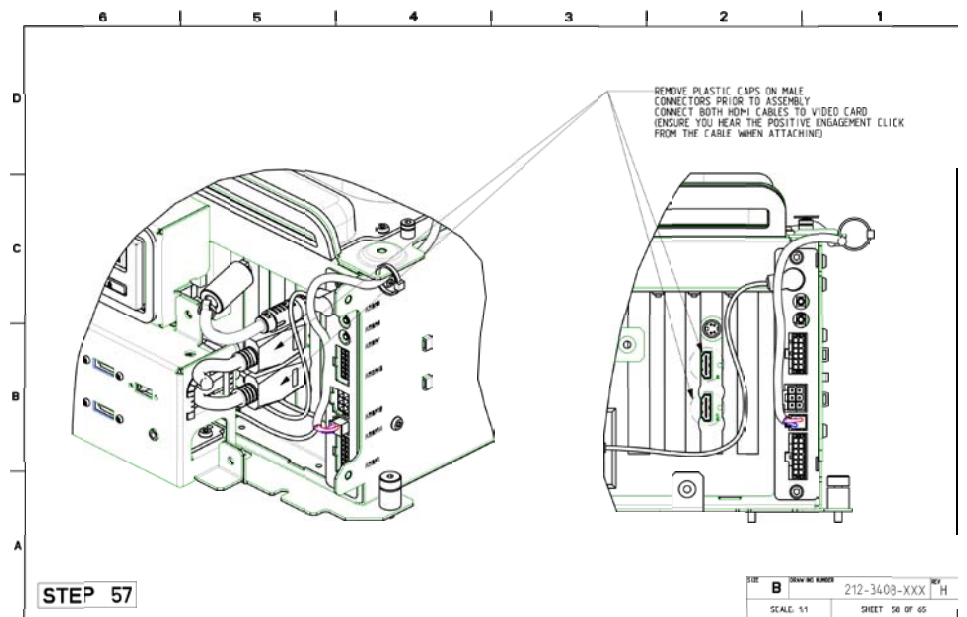
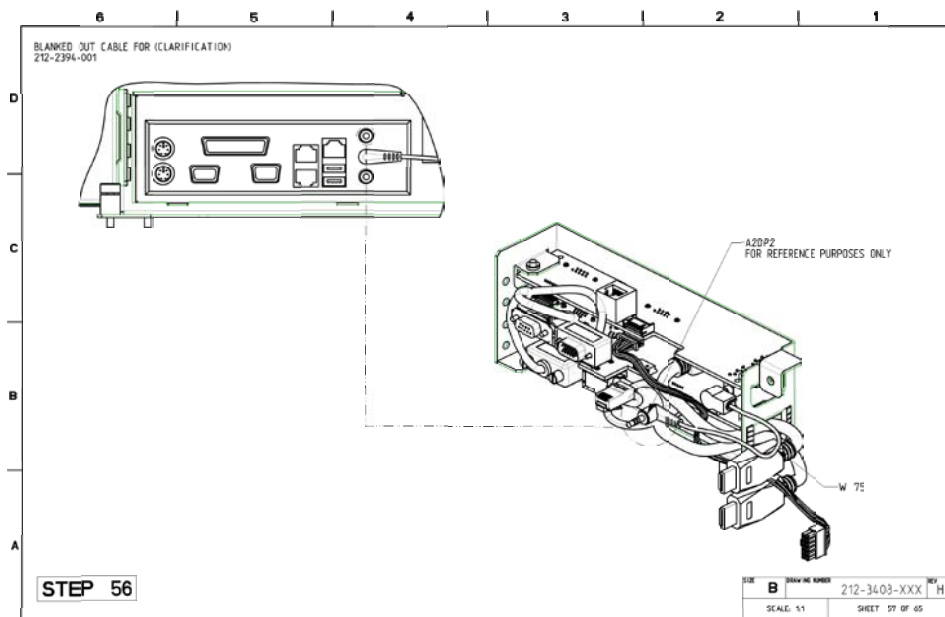


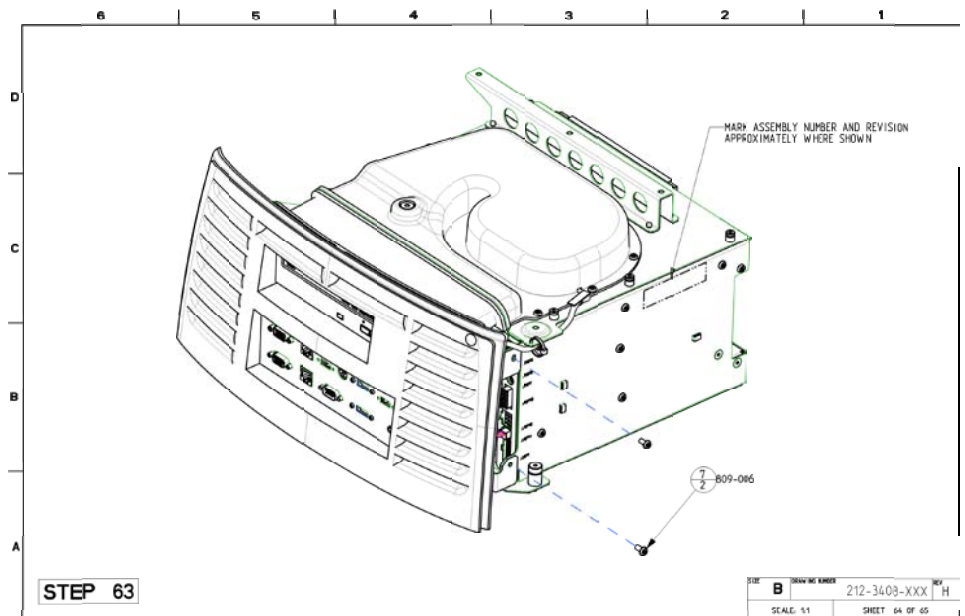
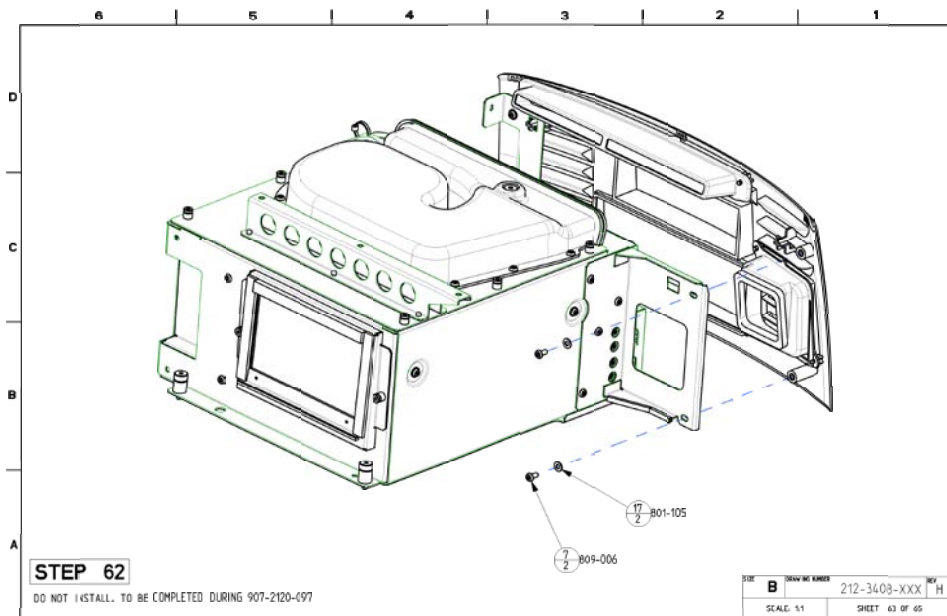
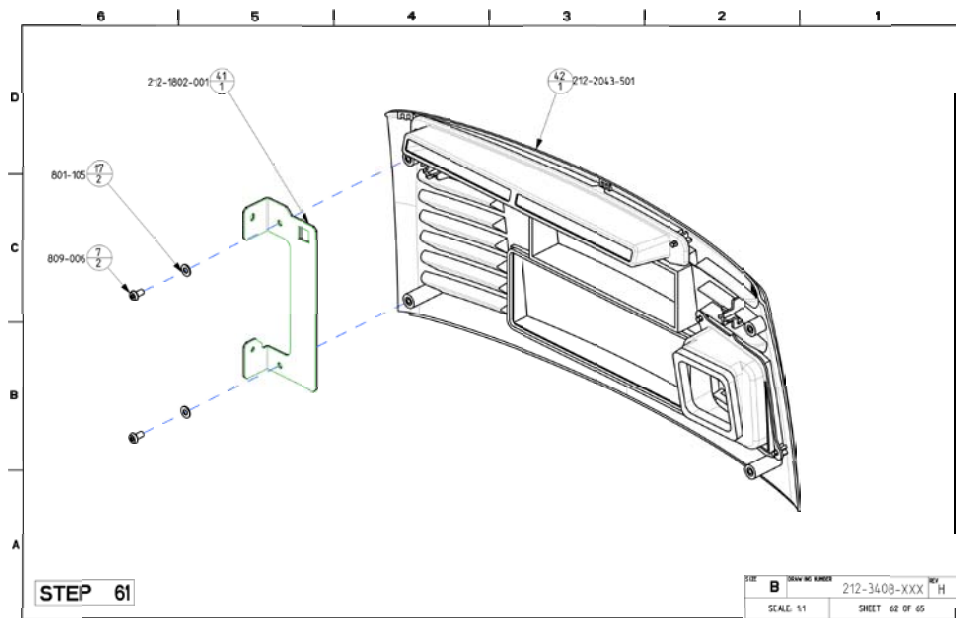
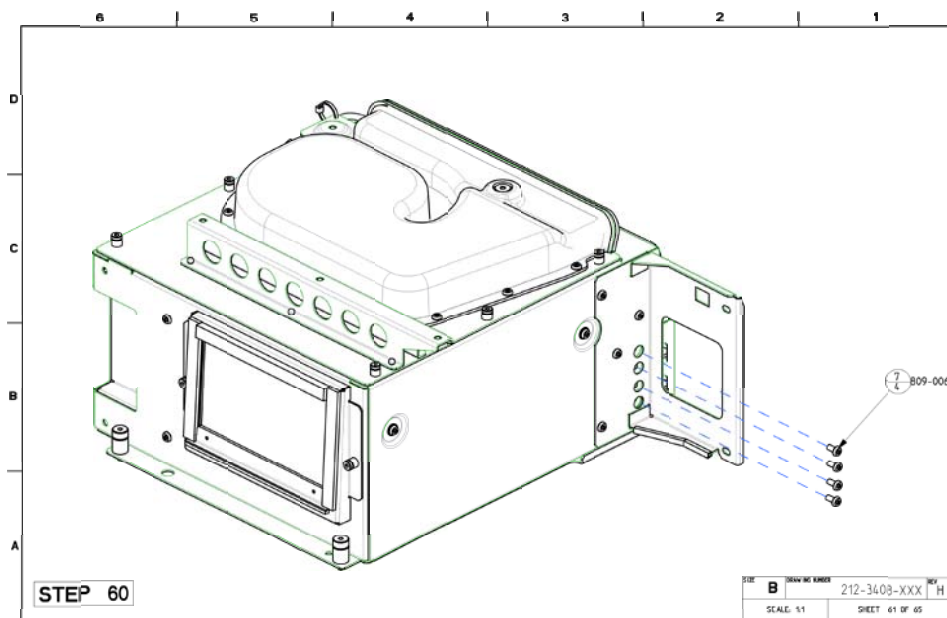


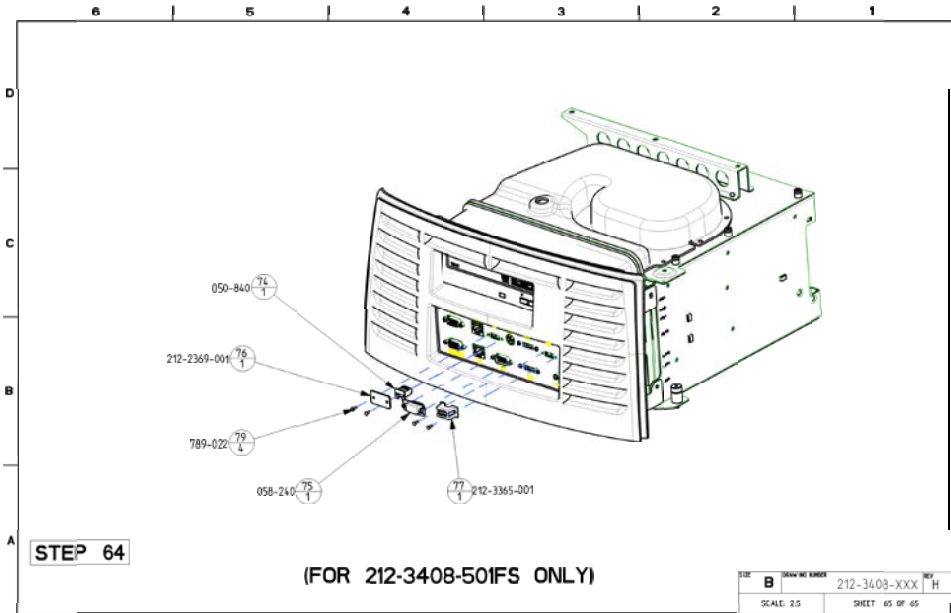












212-3352-501 ASSY, PANEL, EXPANSION
(New WiFi, needs dongle)

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-3349-001	PANEL,CONNECTOR,EXPANSION ASSY	1
002	212-3274-551	ASSY,PCB,UPPER EXPANSION	1
003	809-006	SCREW,BTN HD SKT,M4X8 SST	4
004	212-3273-551	ASSY,PCB,LOWER EXPANSION	1
005	212-3426-001	CABLE ASSY,HDMI PANEL,MT EXT	2
006	212-3350-001	GASKET,EMI,UPPER HOST MODULE	1
007	212-3351-001	GASKET,EMI,LOWER HOST MODULE	1
011	809-126	SCREW,BTN HD SOC,M2.5X8 ND LK	4

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. BUILD PER 992-2120-001.

REVISION HISTORY

REV	ECN	DATE
P2	NOT RELEASED	12/13/12
A	CN032229ECN	07/30/12
B	CN050595ECN	11/24/14
C	CN054057ECN	03/25/14


212-3352-501 SHOWN

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-3352-501	ASSY,PANEL,EXPANSION	212-3352-501'S	C	ASSY,PANEL,EXPANSION SERVICE

SEE SEPARATE PART LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
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BILL OF MATERIAL

BY D. CHOIVANEK	DATE 10/11/11	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED OR DISTRIBUTED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF ALCON.	 IRVINE, CALIFORNIA 92618	DESCRIPTION
CHECKED B. LEE	DATE 10/11/11			ASSY,PANEL,EXPANSION
APPROVED J. FOSTER	DATE 10/11/11			SIZE B
FORMED BY 2/23/2007				SCALE: 1:1

PDM LINK MODEL ATTRIBUTES NAME: 212-3352-501.PROC VERSION: C.0

212-3352-XXX

1/4" TOWARD PANEL

SLIDE GASKET OVER PCB CONNECTORS

212-3350-001

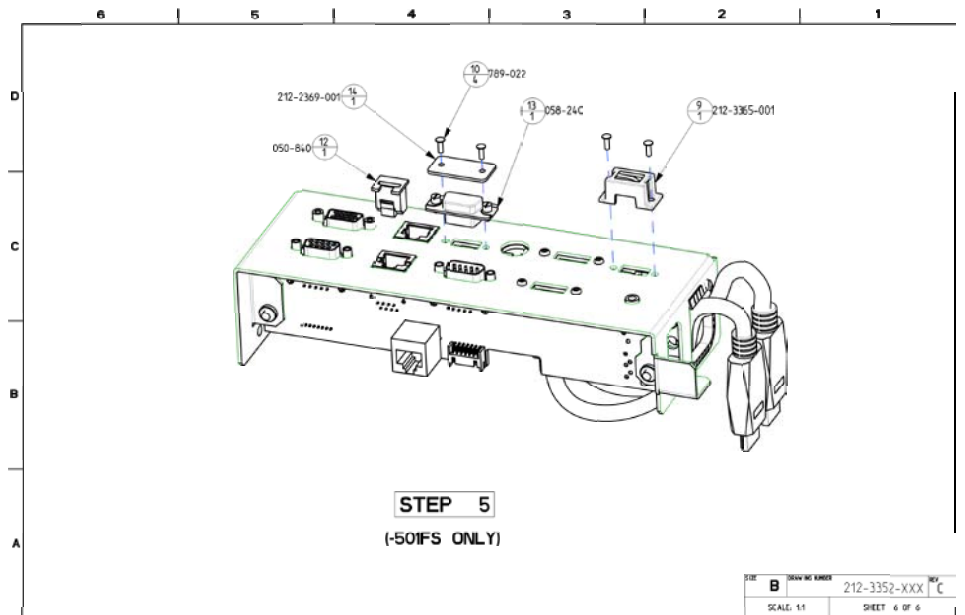
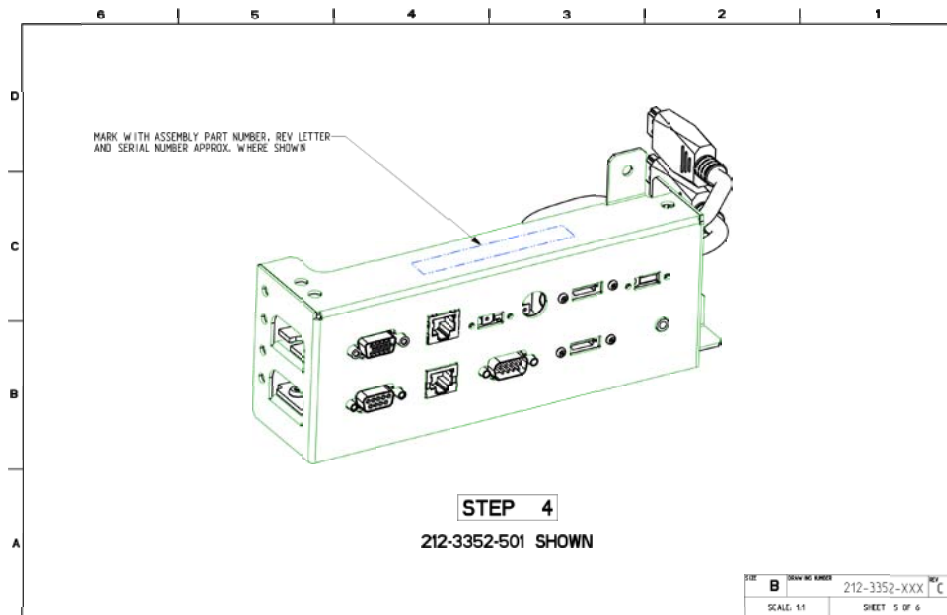
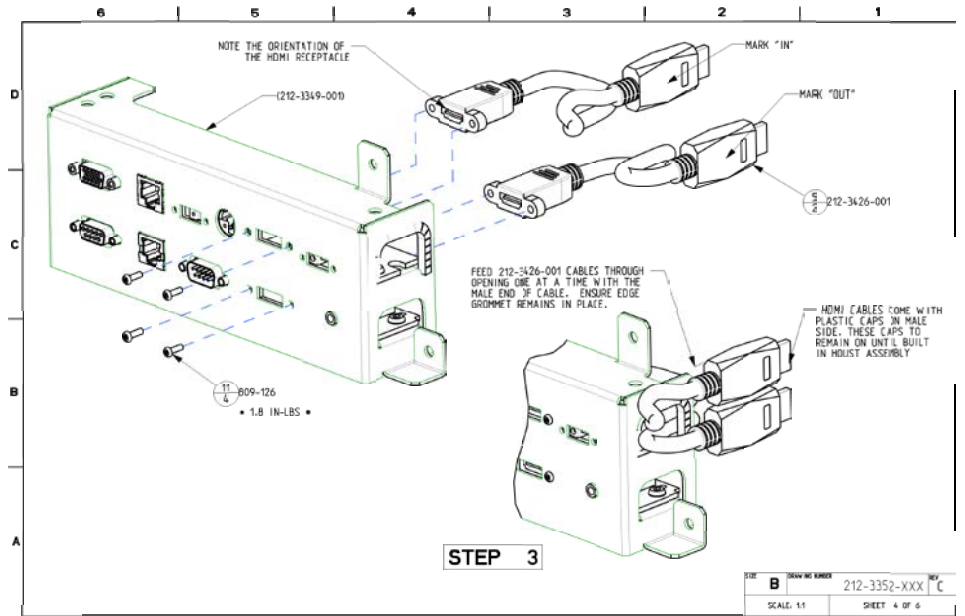
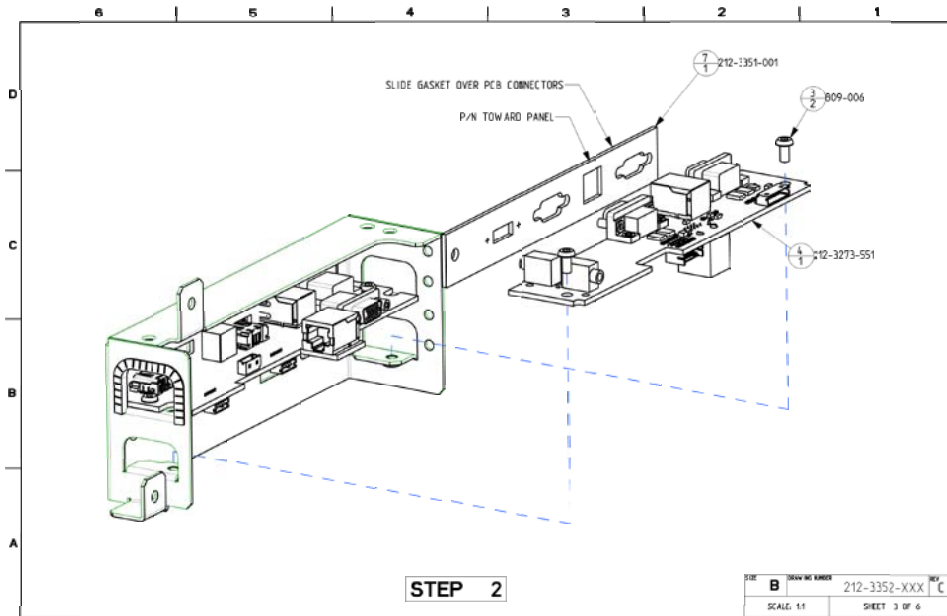
212-3349-001

809-006

212-3274-551

STEP 1
REMOVE BREAKAWAY TABS

SIZE B	SHOW THE NUMBER	212-3352-XXX	REV C
SCALE: 1:1	SHEET 2 OF 6		



212-1016-501 POWER CONTROLLER, TABLETOP

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1935-001	HOUSING,POWER,CONTROL UNIT	1
002	773-112	RING,RETAINING,EXT .39 SPR STL	3
003	212-1972-001	BUSHING,ALIGNMENT,PWR CNTL MOD	3
004	212-1822-551	ASSY,PCB,AC POWER	1
005	212-2223-002	CABLE ASSY,GROUND,W120	1
006	767-102	NUT,HEX,10-32X.361X.114 CS	2
007	797-005	WASHER,INT LOCK.20X.38X.03 ZNC	4
008	212-2260-001	CABLE ASSY,W56,AC CONTROL	1
009	810-001	SCREW,BTN HD SKT,M3X6 BLK	21
010	212-2339-001	POWER SUPPLY,24V,TABLE TOP	1
011	212-2258-001	CABLE ASSY,POWER,DC MAIN W54	1
012	212-2261-001	CABLE ASSY,POWER,AC W57	1
013	212-2257-001	CABLE ASSY,W53,P/S CONTROL	1
014	810-006	SCREW,BTN HD SKT,M4X8 BLK	4
015	027-003	CABLE TIE,.625X3.50L,NYLON	2
016	212-1988-001	BARRIER,AIR,WALL POWER DIST	1
017	809-006	SCREW,BTN HD SKT,M4X8 SST	2
018	212-1511-551	ASSY,PCB,POWER CONTROLLER	1
019	212-2638-001	DUCT ASSY,MODULE,POWER	1
020	212-1936-001	COVER,POWER,CONTROL UNIT	1
021	811-001	SCREW,FLAT HD SKT,M3X6 SST	6
022	027-046	STRAP,HOOK/LOOP,VELCRO .5X12.0	2
023	674-196	FASTENER,HOOK,1IN BLK	1
024	212-2227-002	BATTERY,LI-ION,W55	1
025	674-195	FASTENER,LOOP,1IN BLK	1
026	212-2223-003	CABLE ASSY,GROUND,W121	1
027	813-002	NUT,HEX,M4X0.7 W/LOCK WASHER	2

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. -5XXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -5XX SERIES P/N.
5. BUILD PER 992-2120-001 AND TEST PER 907-2120-012
6. *XX IN-105* INDICATES TORQUE SPECIFICATIONS ON HARDWARE. ALL TORQUE TOLERANCES ARE +/- 10% OF NOMINAL VALUE, UNLESS OTHERWISE SPECIFIED.

3D VIEW

TABULATION BLOCK

PART NUMBER	REV.	DESCRIPTION	PART NUMBER	REV.	DESCRIPTION	PART NUMBER	REV.	DESCRIPTION
212-1016-501	G	ASSY,MODULE,PWR CTRL TABLETOP	212-1016-501S	G	ASSY,MODULE,PWR CTRL TT SVCE	212-1016-501FS	G	ASSY,MODULE,PWR CTRL TT FLT SV

SEE SEPARATE PARTS LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	212-1016-501	ASSY,MODULE,PWR CTRL TABLETOP		

REVISION HISTORY

REV	ECN	DATE
P32	NOT RELEASED	03/06/08
A	20080767	03/11/08
B	20082000	08/05/08
C	20082205	08/26/08
D	20091137	07/02/09
E	20101000	06/24/10
F	CN053319ECN	02/27/14
G	CN054226ECN	04/10/14

APPROVED

BY	DATE	DESCRIPTION
J. ATHERLEY	06/21/05	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE DISCLOSED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF ALCON.
H. NGUYEN	01/14/03	
M. KOSMULA	01/14/03	
REVIEW	2/23/2007	

ALCON
Irvine, California 92618

ASSY,MODULE,PWR CTRL TABLETOP

SIZE **B** **DRAWING NUMBER** 212-1016-XXX **REV** G

SCALE 2:5 **SHEET** 1 OF 25

VERSION 6.1

STEP 1

APPROVED

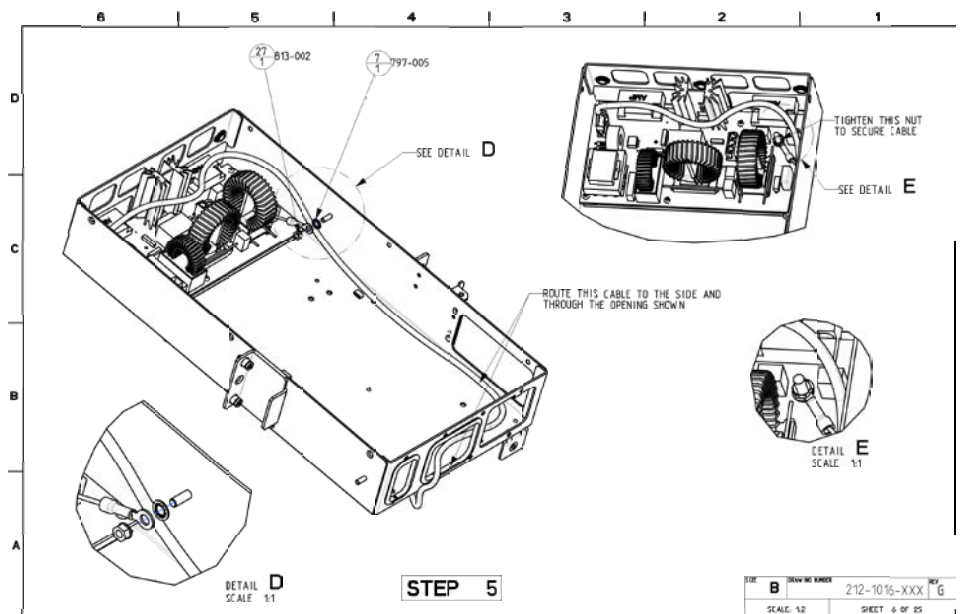
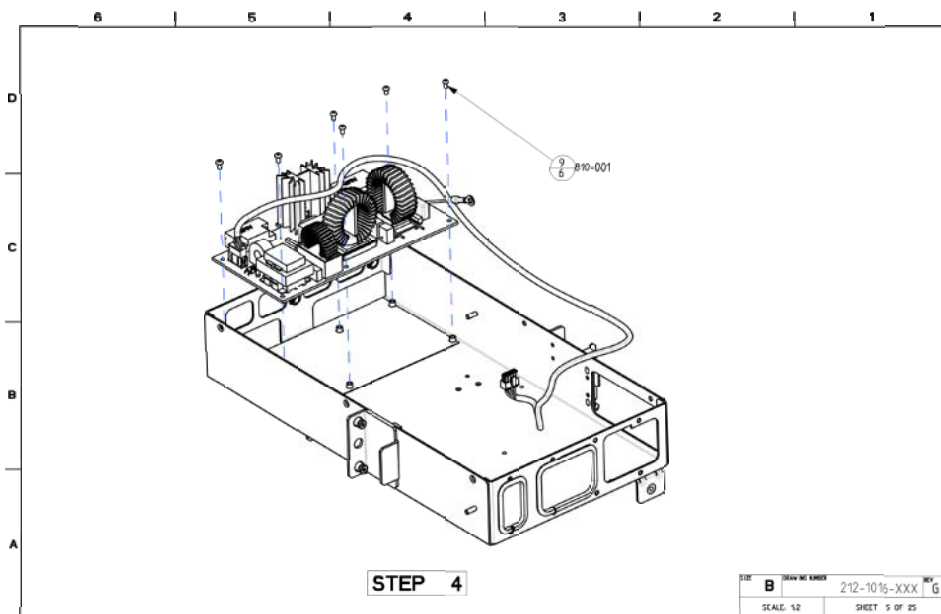
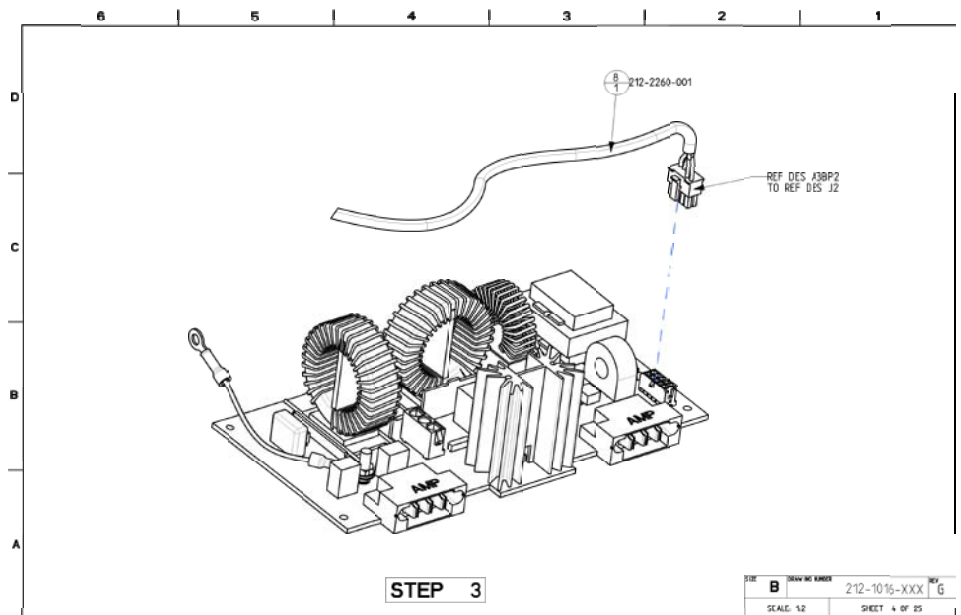
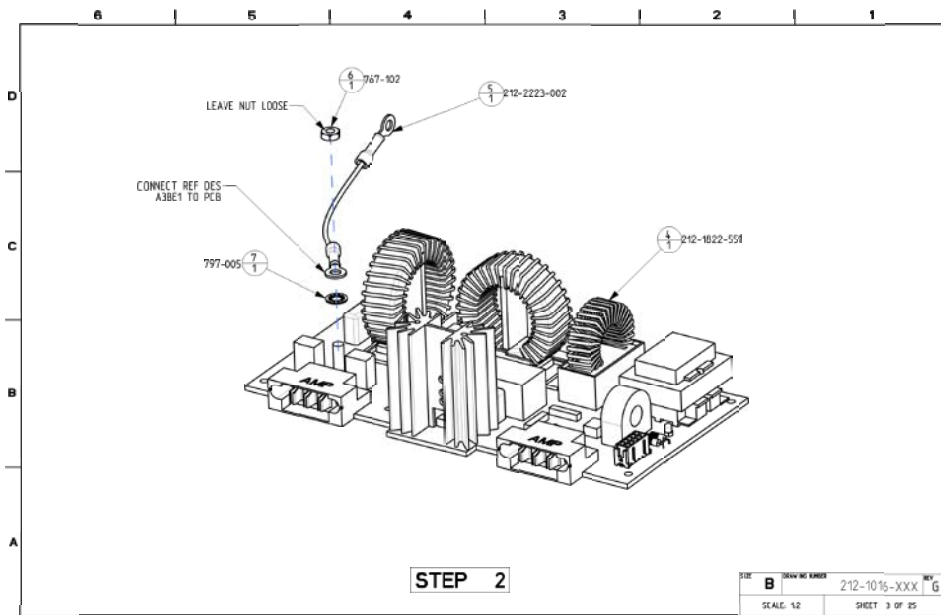
BY	DATE	DESCRIPTION
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H. NGUYEN	01/14/03	
M. KOSMULA	01/14/03	
REVIEW	2/23/2007	

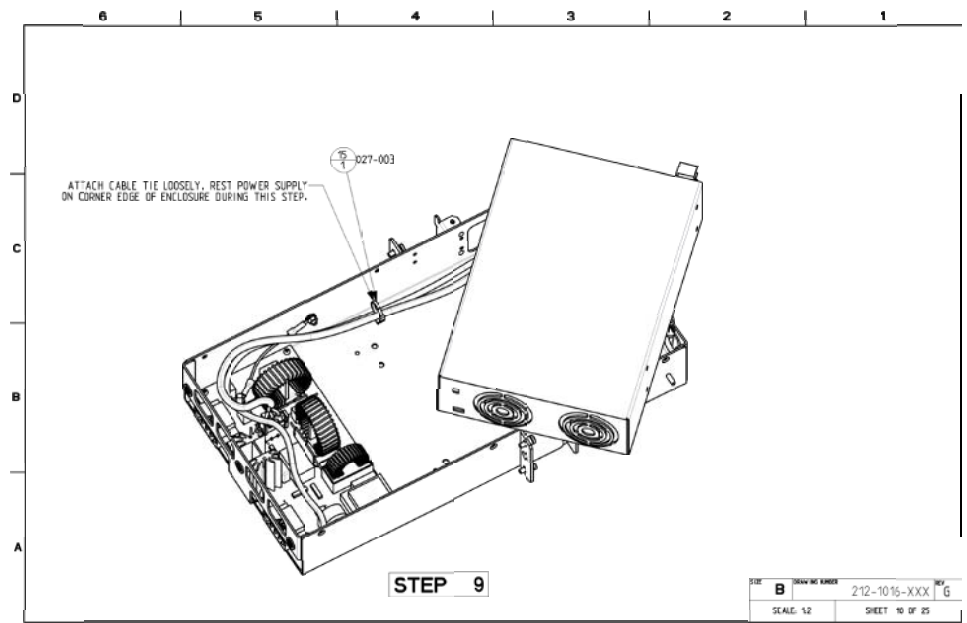
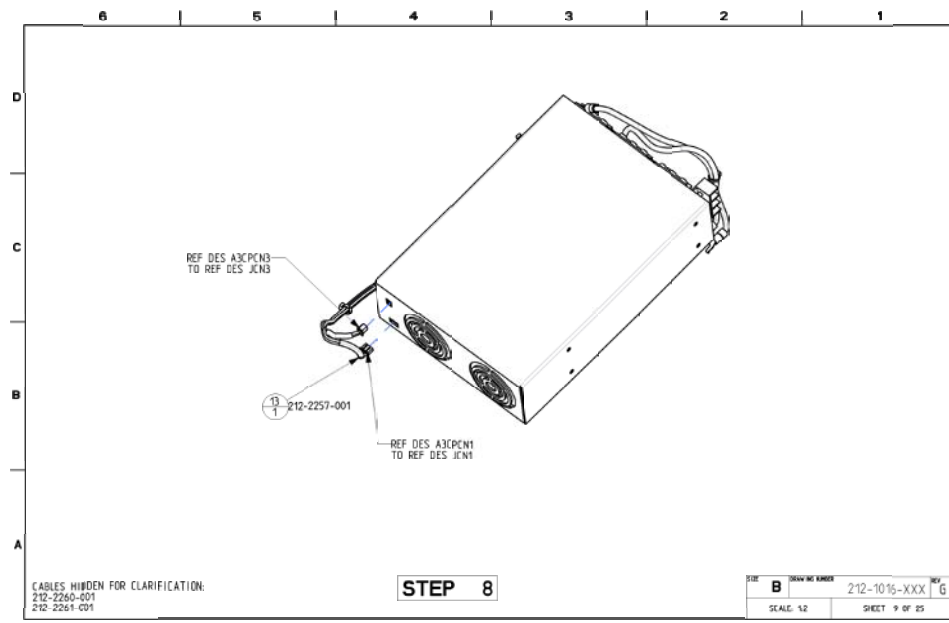
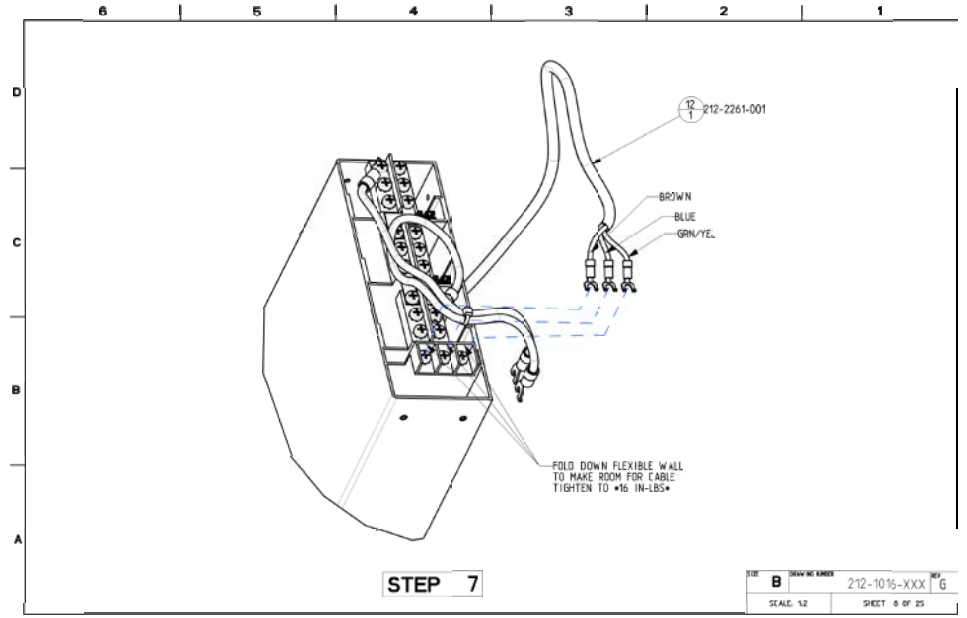
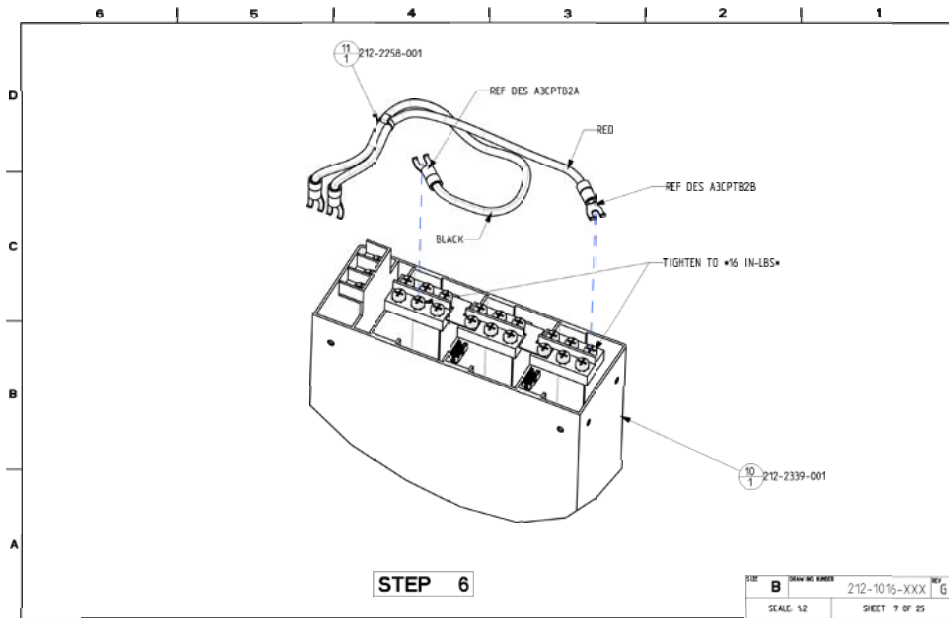
ALCON
Irvine, California 92618

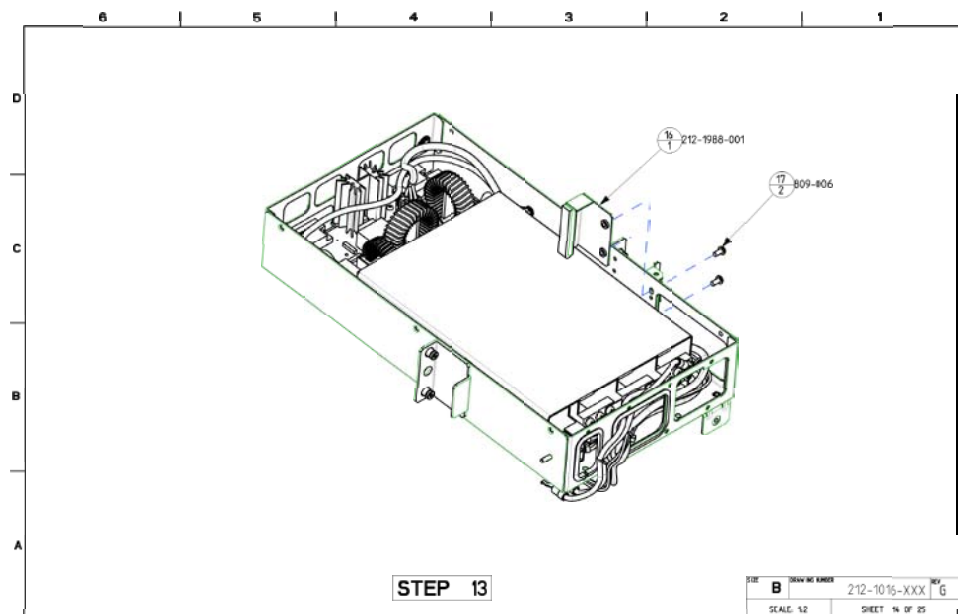
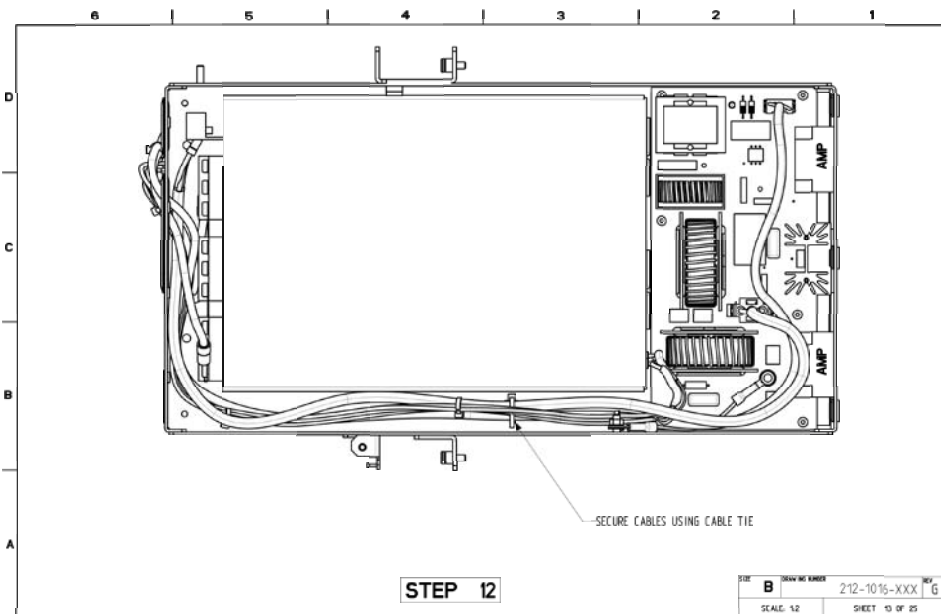
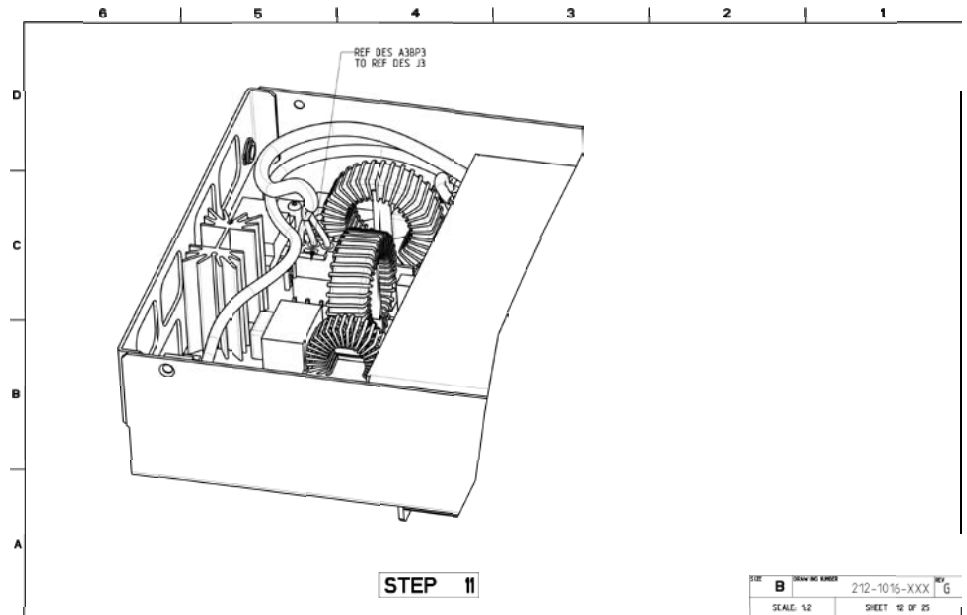
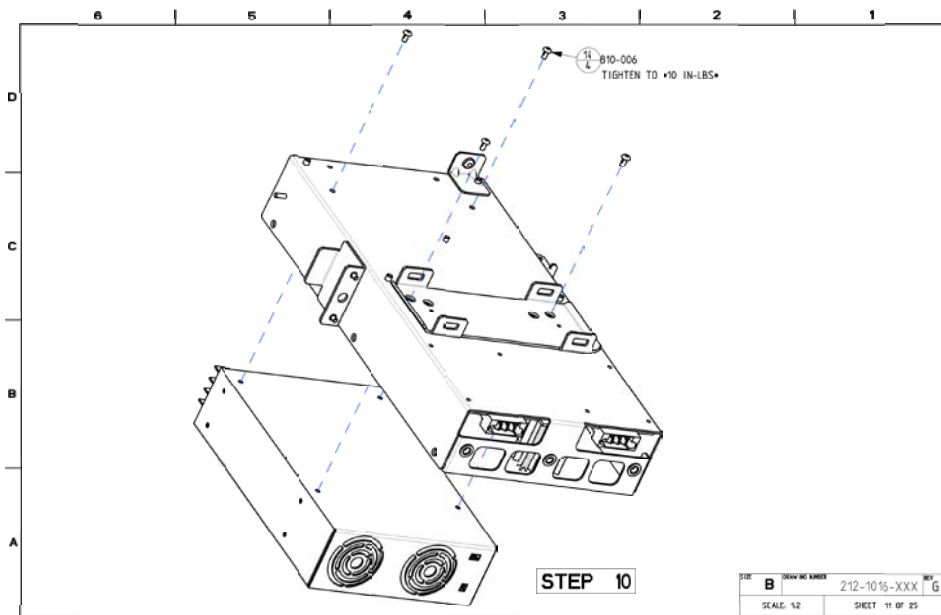
ASSY,MODULE,PWR CTRL TABLETOP

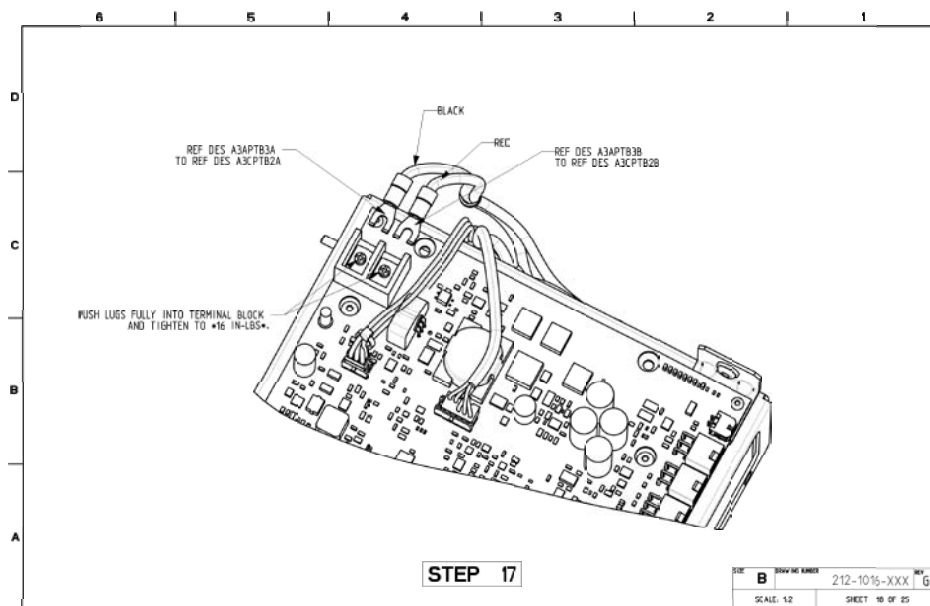
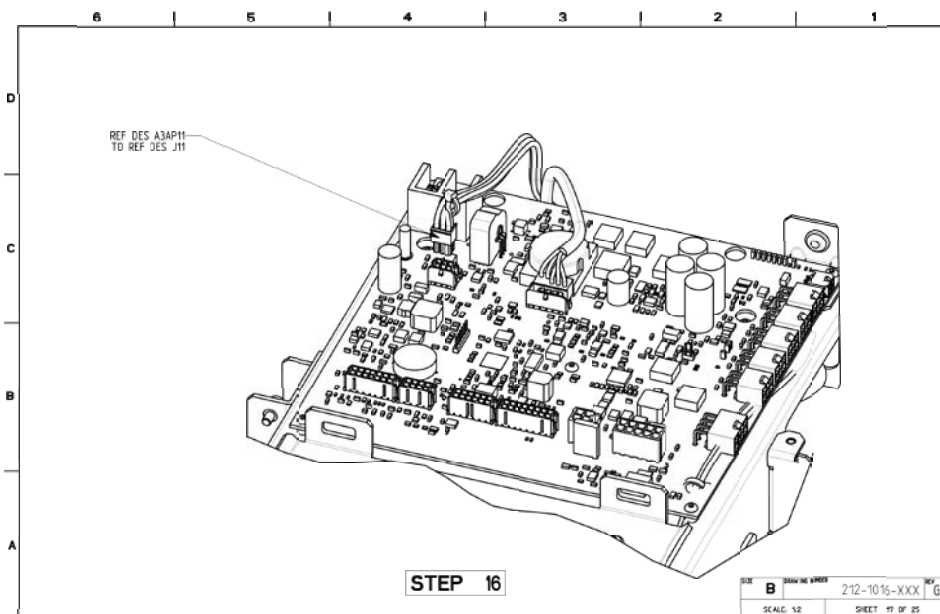
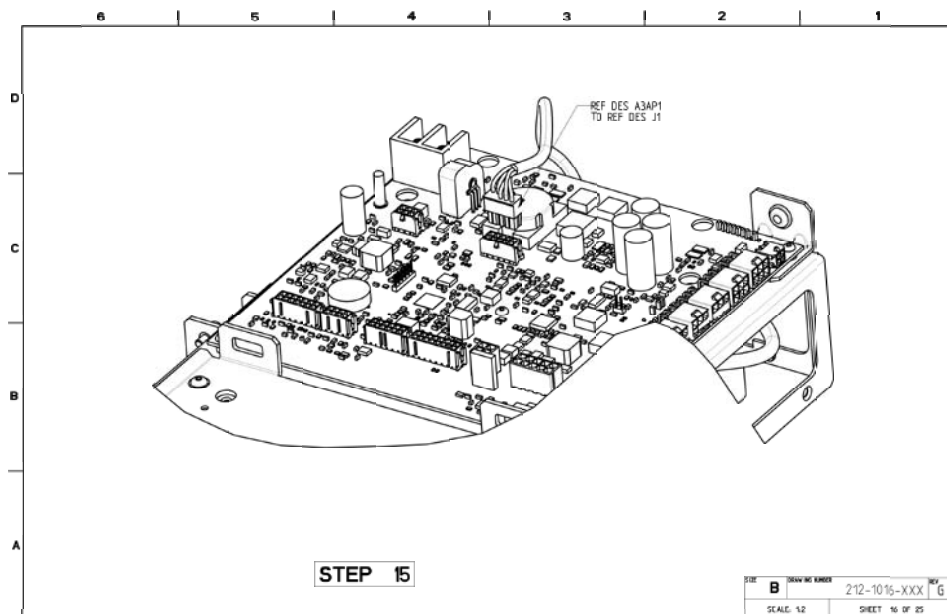
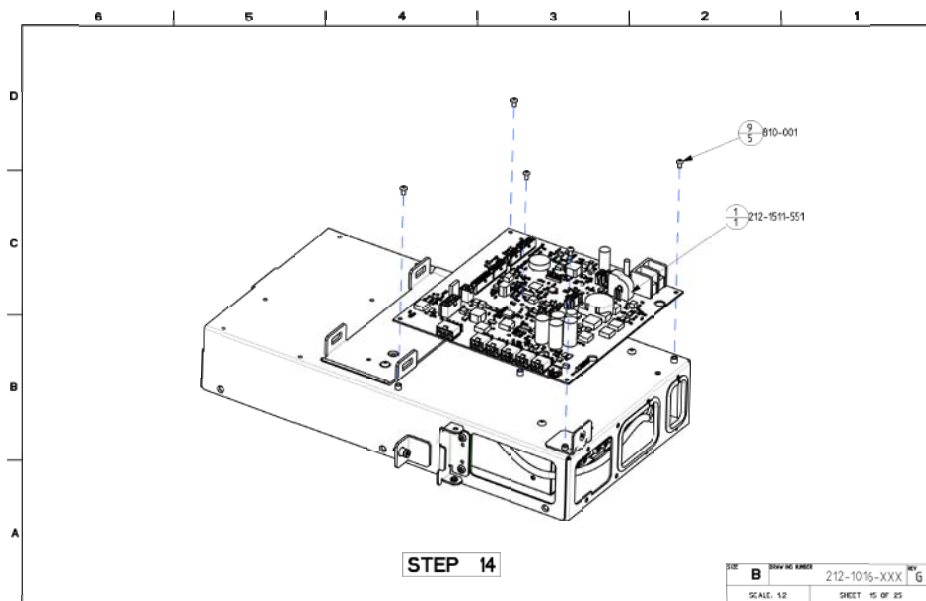
SIZE **B** **DRAWING NUMBER** 212-1016-XXX **REV** G

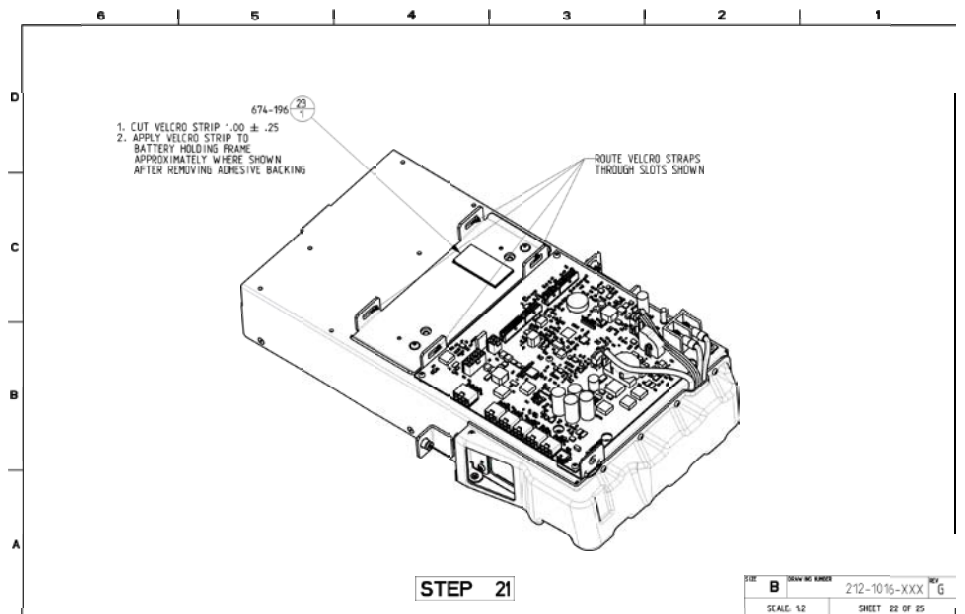
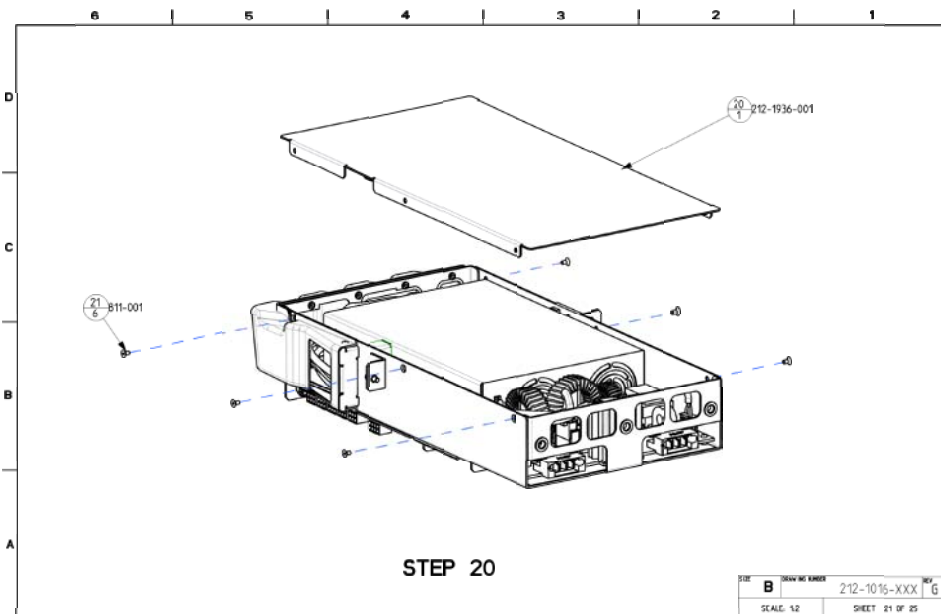
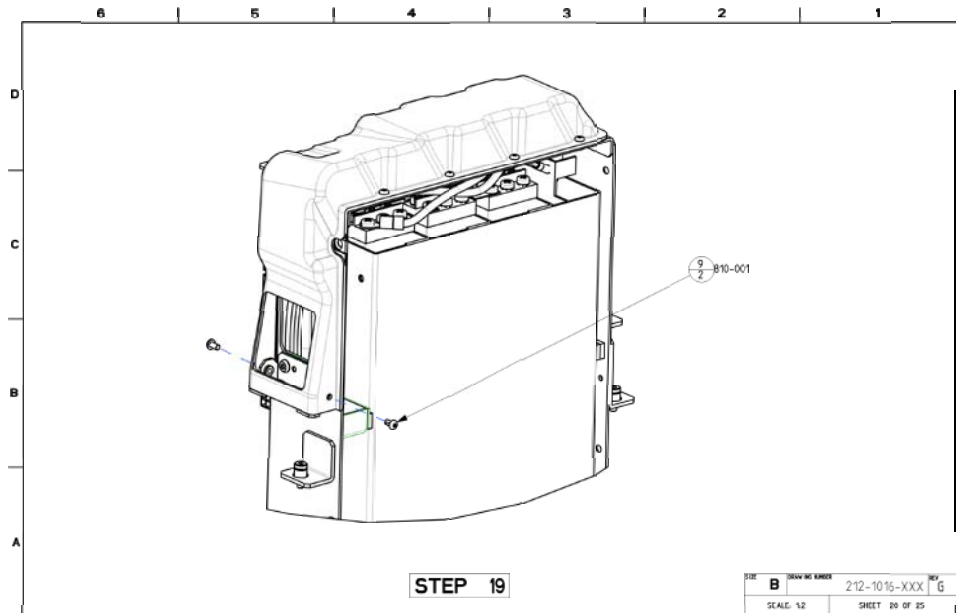
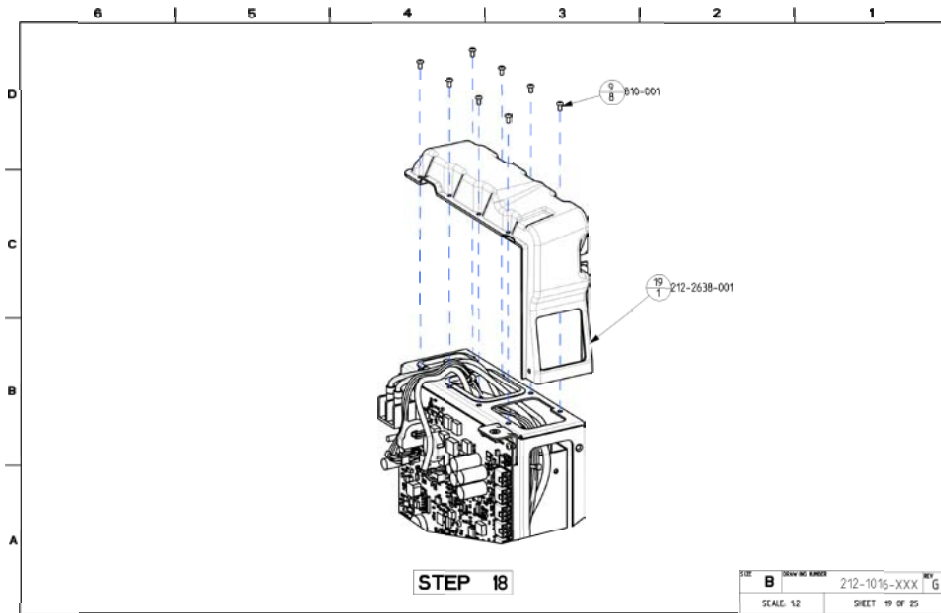
SCALE 1:2 **SHEET** 2 OF 25

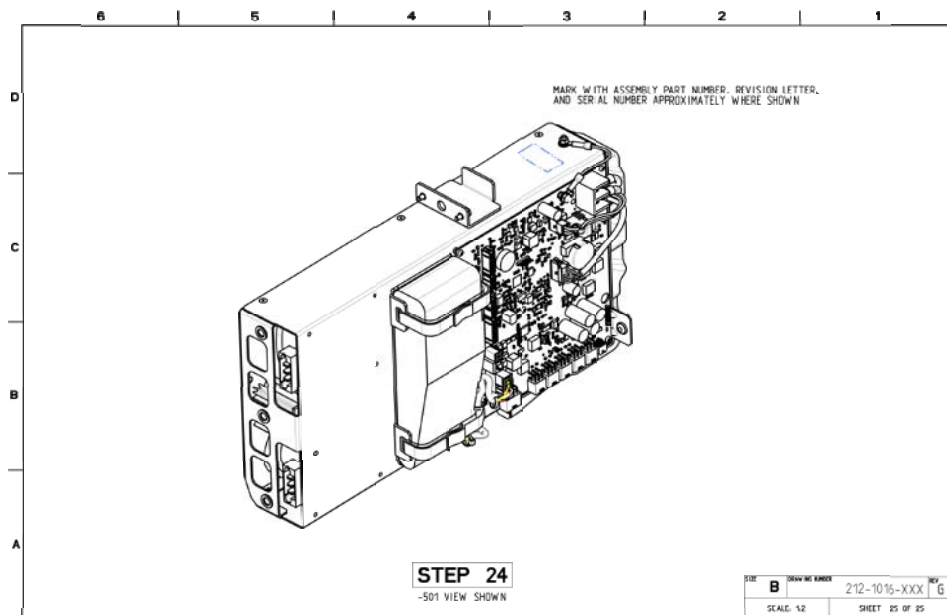
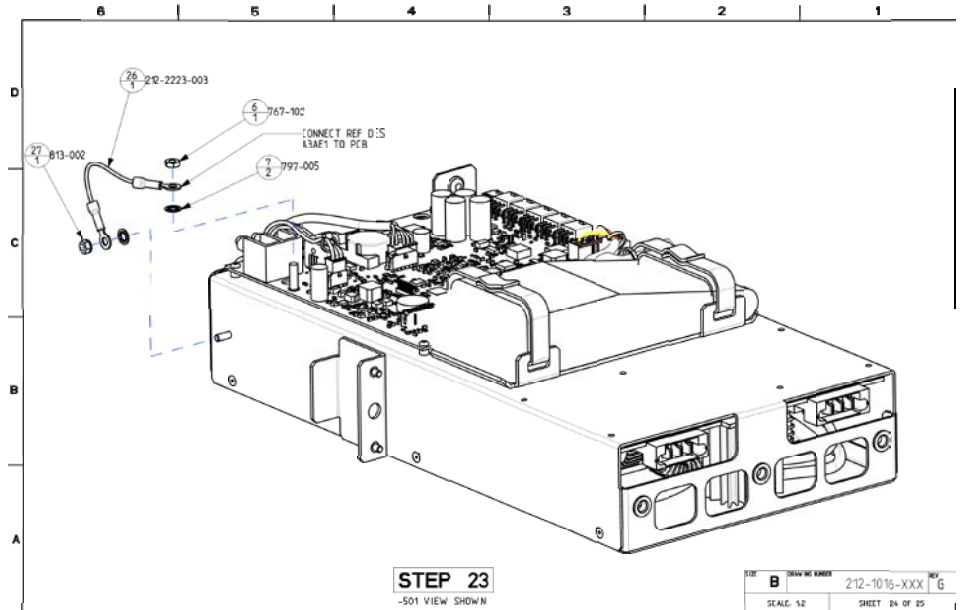
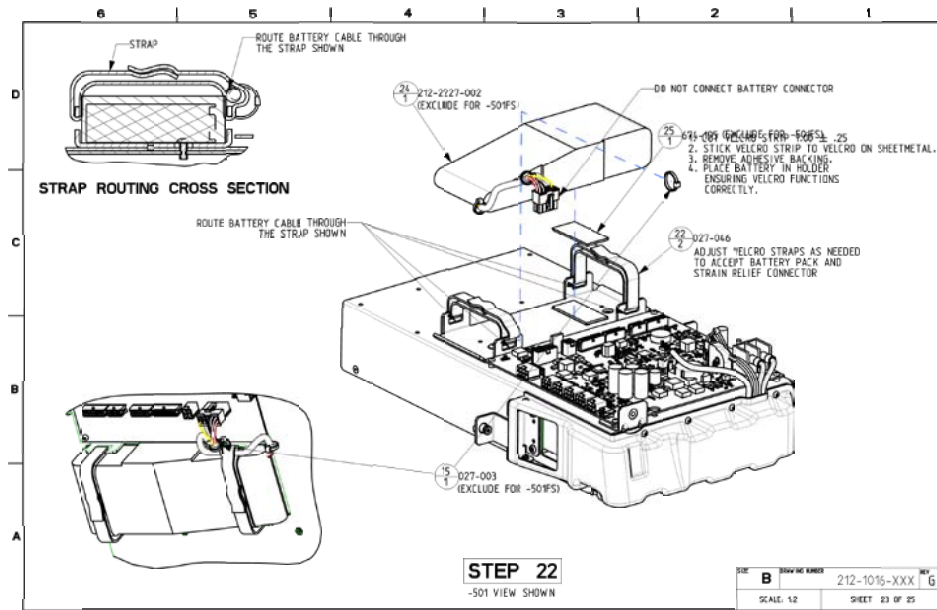










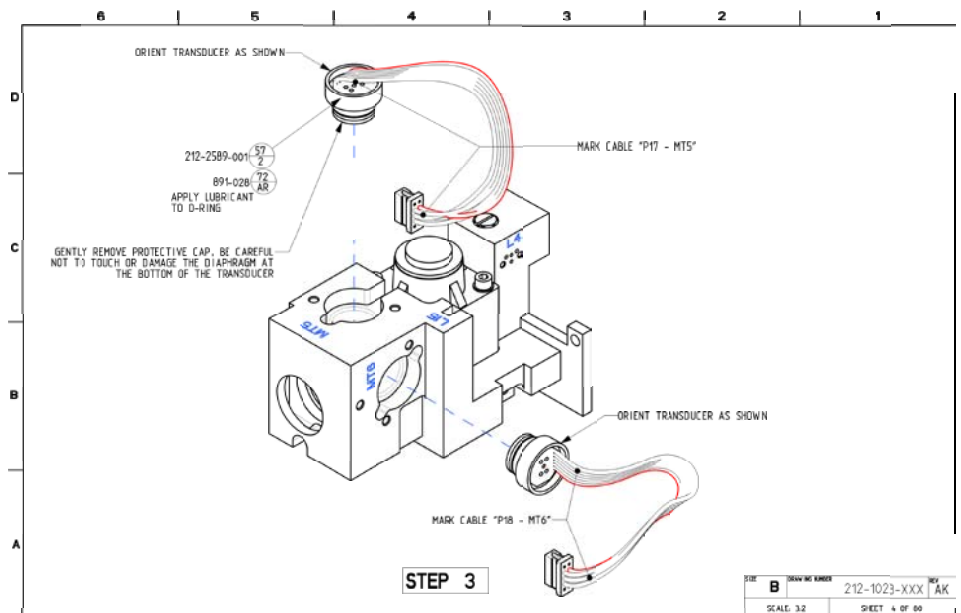
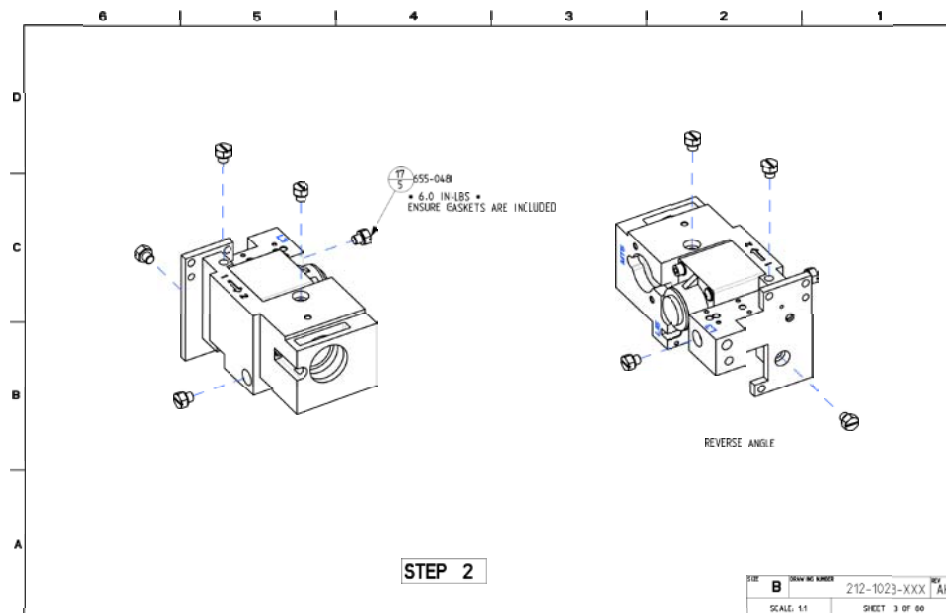
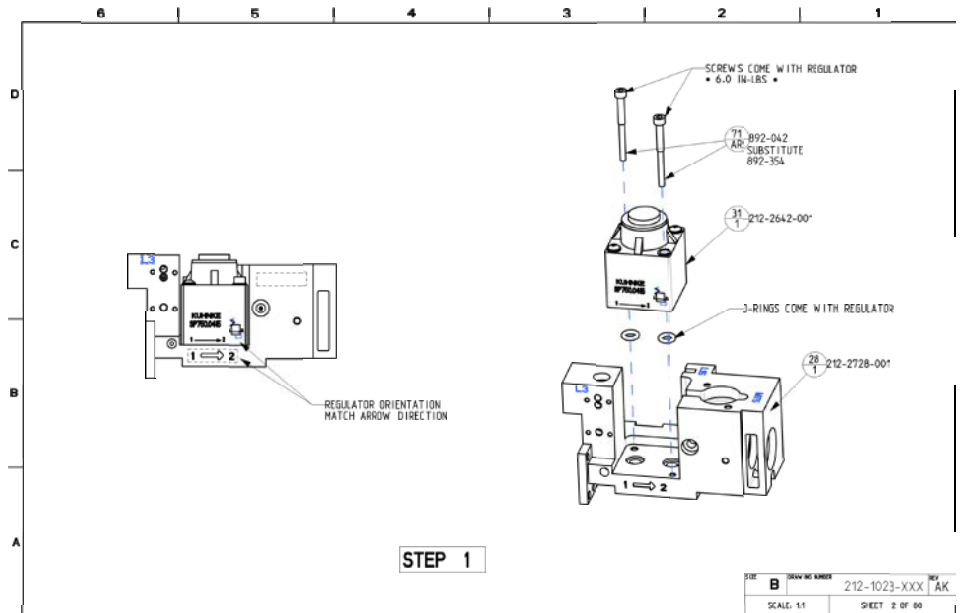
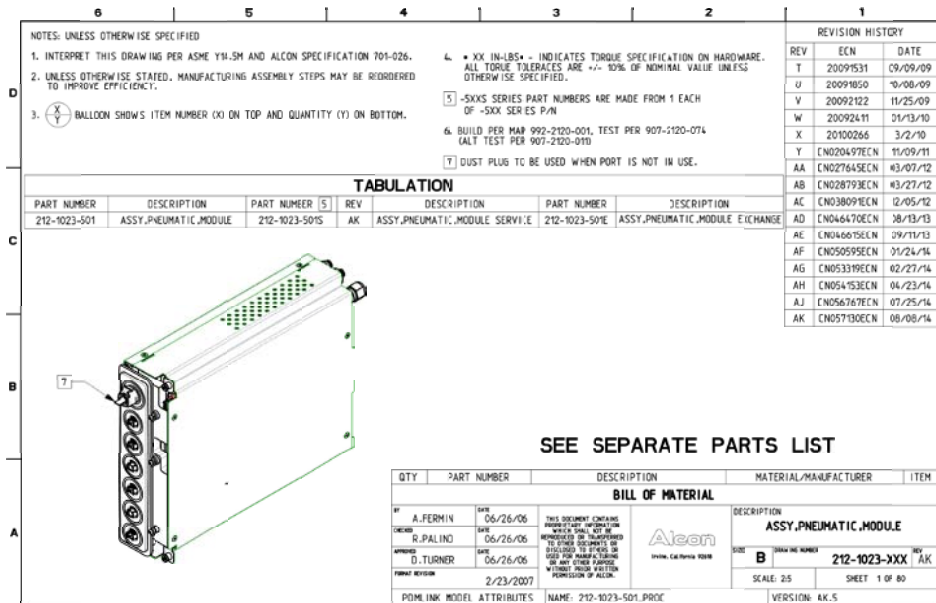


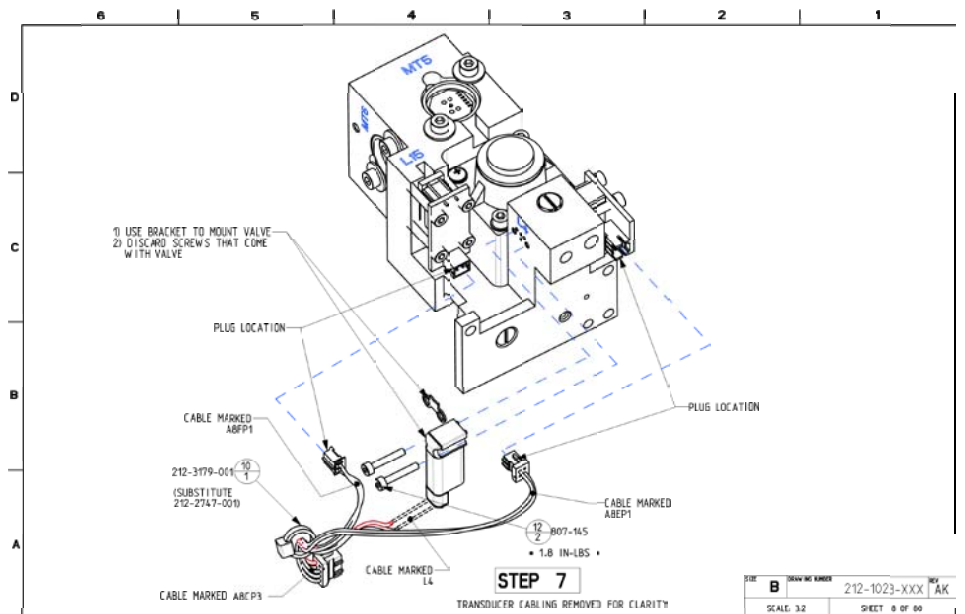
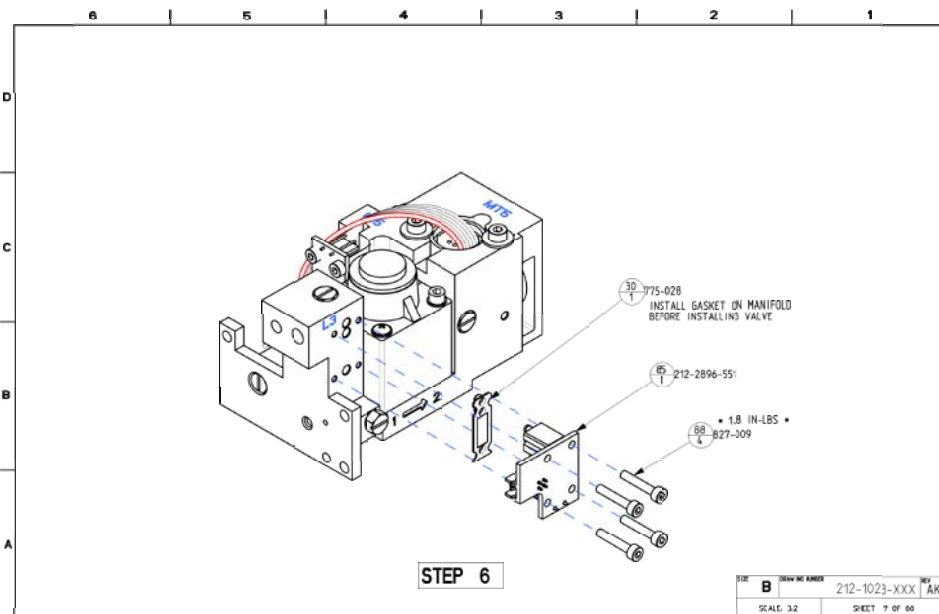
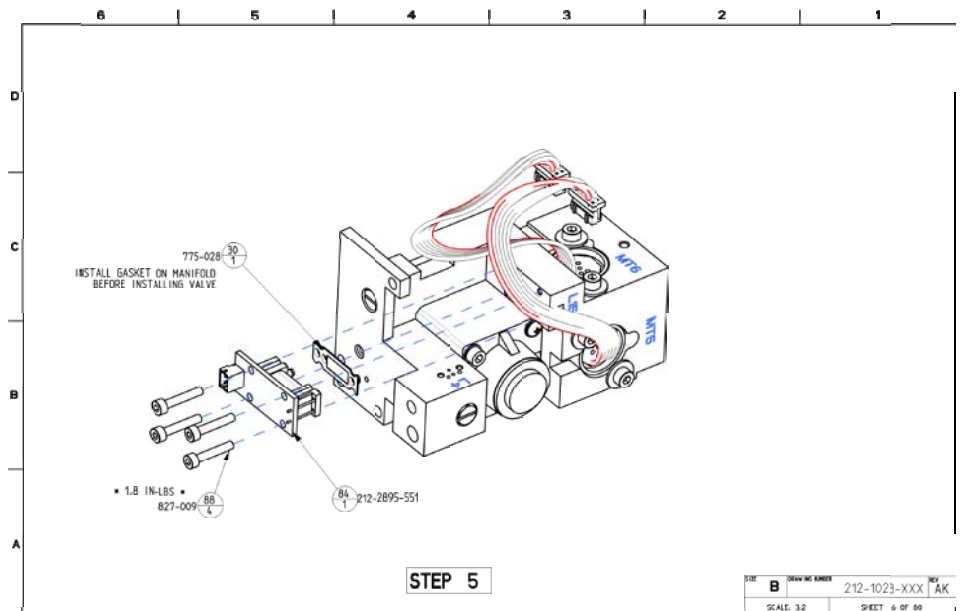
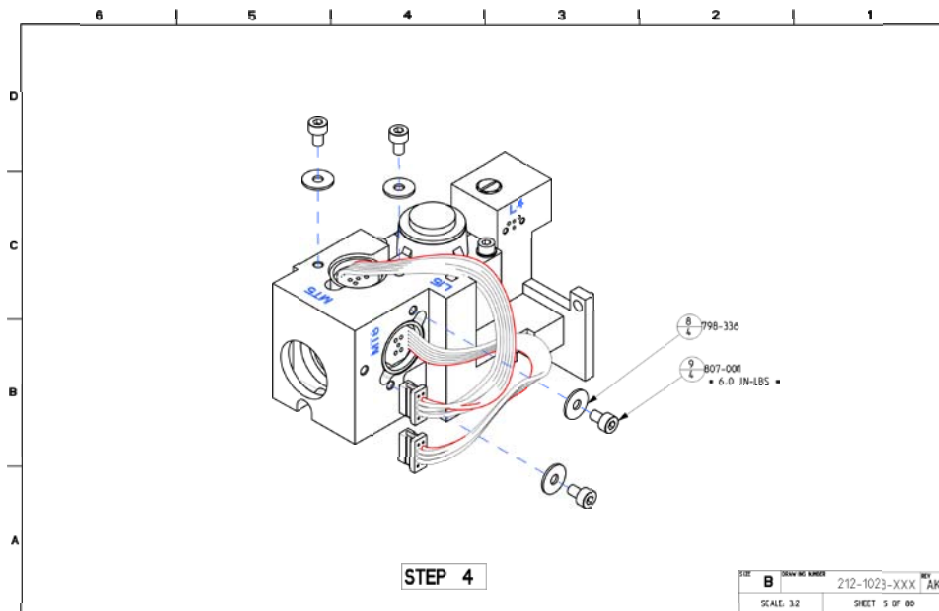
212-1023-501 MODULE, PNEUMATIC

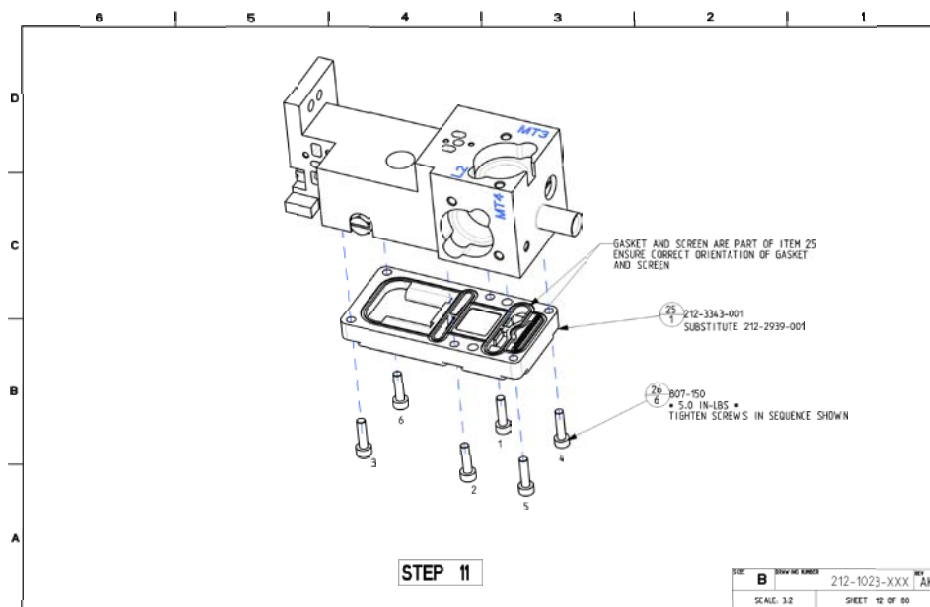
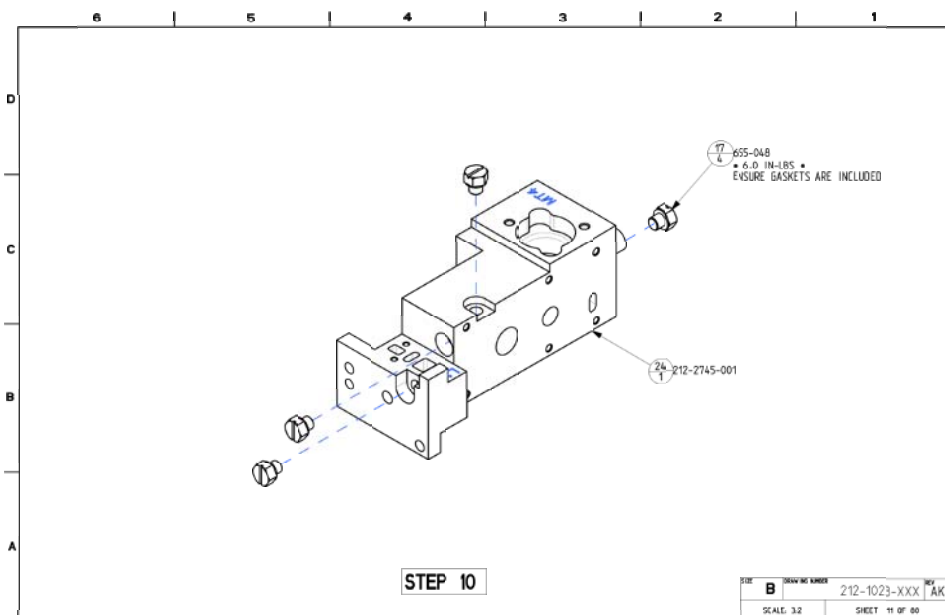
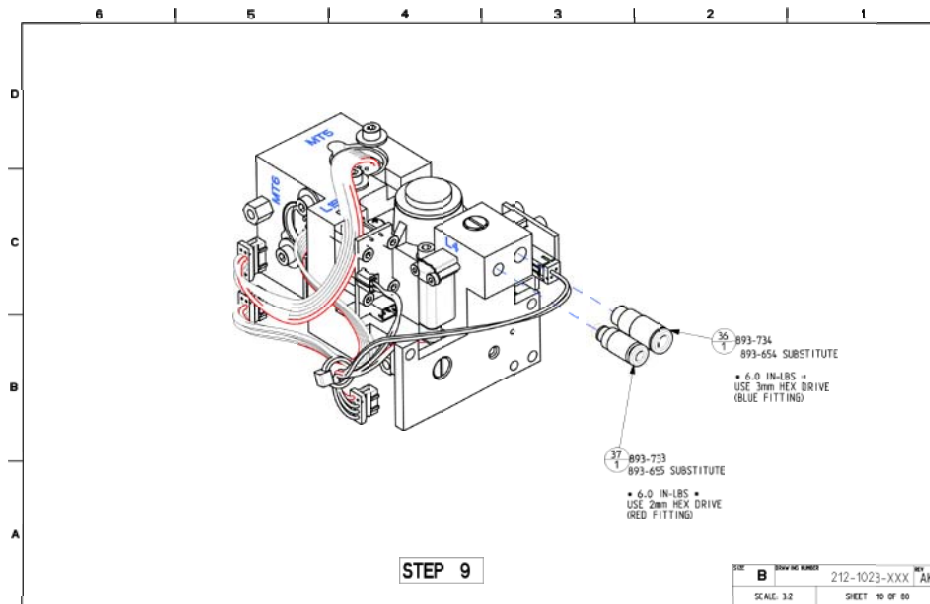
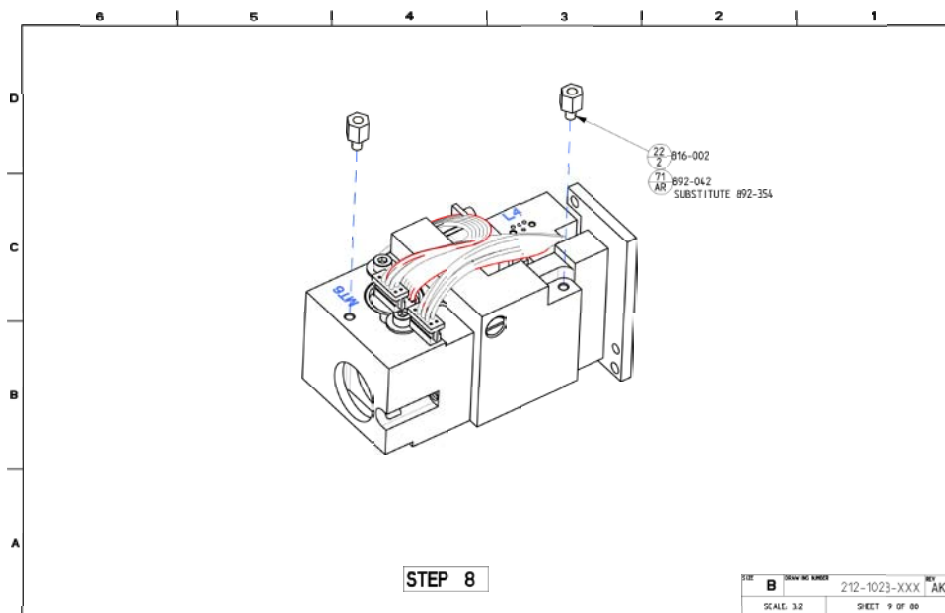
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001	212-1533-001	MANIFOLD ASSY,PLATE,REAR	1
002	655-054	PLUG, SOCKET, 5/16-24X1/8 HEX	8
003	212-2204-001	GASKET, RECIEVER, PNEUMATIC	1
004	212-2746-001	RECEIVER, AIR	1
005	807-003	SCREW, CAP HD SKT, M3X8 SST	1
006	655-058	PLUG, HOLLOW, 3/8-24X5/32 HEX	2
007	212-2590-001	CABLE ASSY, PRESS SENSOR, 100	8
008	798-336	WASHER, FLAT, .125X.375X.030 SST	21
009	807-001	SCREW, CAP HD SKT, M3X5 SST	32
010	212-3179-001	CABLE ASSY, W126	1
011	212-2748-001	CABLE ASSY, W128	1
012	807-145	SCREW, CAP HD SKT, M2.0X12 SST	2
013	774-173	O-RING, .114X.070, VITON	10
014	212-3395-001	CABLE ASSY, VIT VALVES, W132	1
015	807-006	SCREW, CAP HD SKT, M3X16 SST	11
016	212-2705-001	MANIFOLD, ADAPTOR, HIGH SPEED	1
017	655-048	PLUG, 10-32 THD, BRASS	16
018	674-184	SILENCER, BC, SINTERED BODY	4
019	212-2591-001	CABLE ASSY, SMC VALVE, W125	3
020	212-2594-001	CABLE ASSY, VIT, W131	1
021	212-2706-001	MANIFOLD, SHEAR, MVI	1
022	816-002	STANDOFF, M/F, M3.0X6MMX6 SST	5
023	212-2722-001	MANIFOLD, SHEAR, SCISSOR	1
024	212-2745-001	MANIFOLD, INJECT-EXTRACT	1
025	212-3343-001	PUMP, VACUUM, Z-048	1
026	807-150	SCREW, CAP HD SKT, M2.5X10 SST	6
027	895-289	MUFFLER, .125 NPT, PLASTIC	1
028	212-2728-001	MANIFOLD, AGF	1
030	775-028	GASKET, SEAL, X-VALVE MANIFOLD	2
031	212-2642-001	REGULATOR, PRESSURE, 0-15 PSIG	1
032	774-178	O-RING, .239IDX.379OD, VITON	9
036	893-734	FITTING, M6X4MM, TUBE HEX HEAD	1
037	893-733	FITTING, 10-32X.125, TUBE HEX HD	1
038	212-2672-552	ASSY, PCB, PNEUM MAIN	1
039	893-736	FITTING, UNION, .125 OD TUBE	1
040	893-735	FITTING, UNION, 4MM OD TUBE	1
041	212-2710-551	ASSY, PCB, PNEUM TRANS INT	1
042	212-2723-001	MANIFOLD, PLATE, FRONT	1

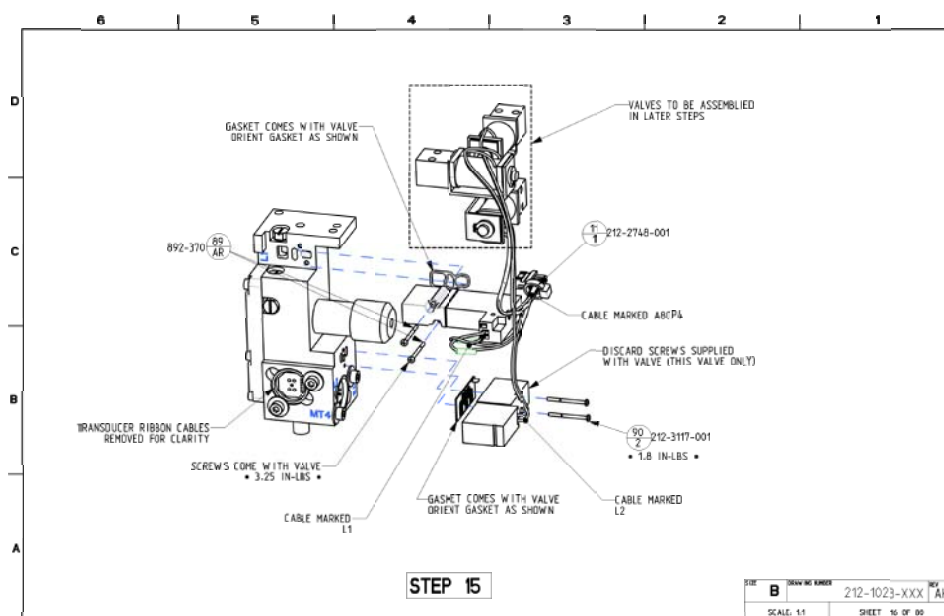
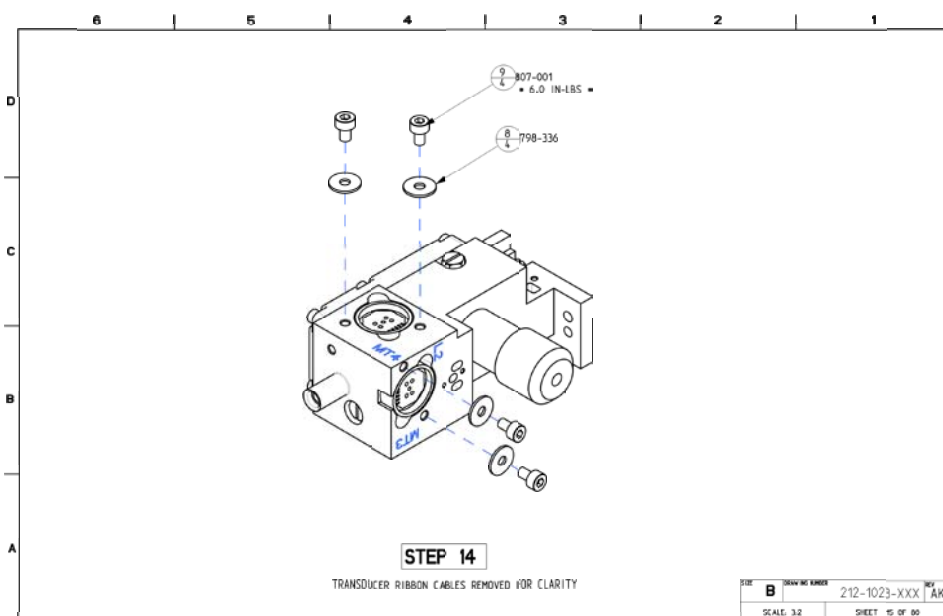
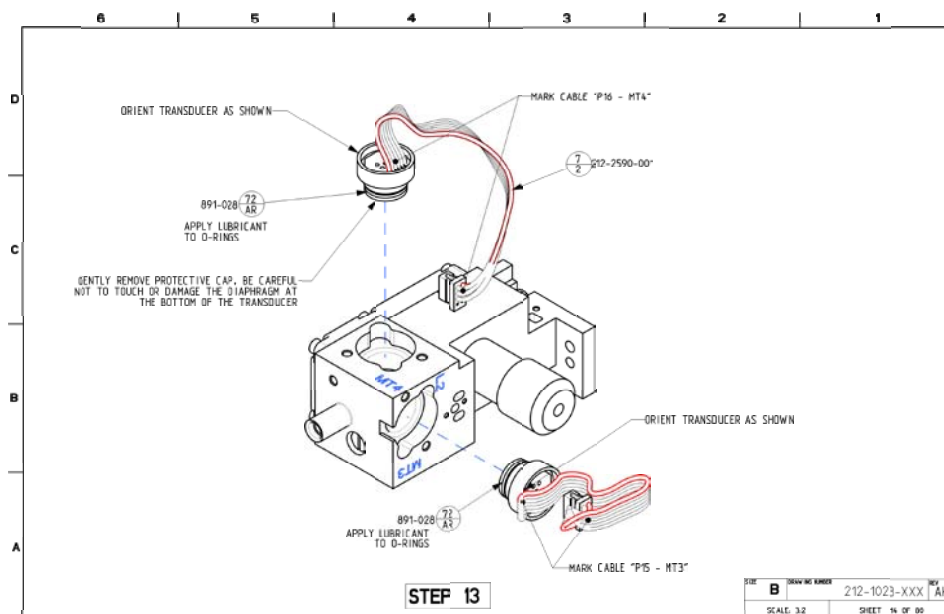
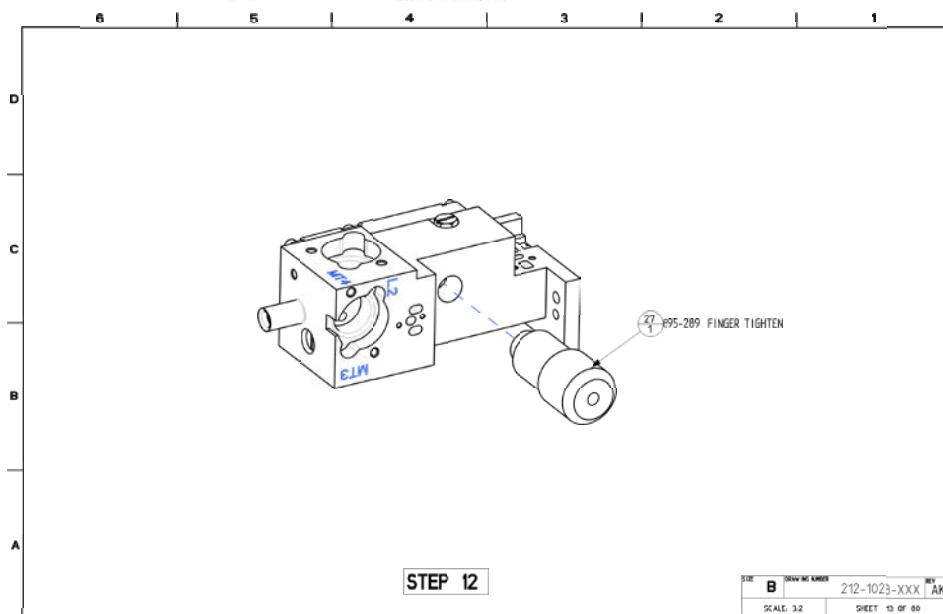
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043	212-3263-001	CONNECTOR, MALE, PNEU LOCKING	4
044	212-1390-001	CONNECTOR, FEMALE, PNEU LOCKING	2
045	212-2859-003	FACEPLATE, PNEUMATICS, PTD IEC	1
046	212-3216-551	ASSY, PCB, PNEUMATIC RFID	1
047	212-2730-001	CONNECTOR, COAXIAL, CPC	1
048	807-005	SCREW, CAP HD SKT, M3X12 SST	3
049	810-002	SCREW, BTN HD SKT, M3X8 BLK	4
050	893-636	FITTING, COMPRESS, 3/8X9/16-18	1
051	212-2758-001	TUBE, AIR, INCOMING	1
052	893-637	FITTING, COMPRESS, 3/8 UNION	1
053	212-3198-001	ENCLOSURE, SIDE, LEFT	1
054	811-001	SCREW, FLAT HD SKT, M3X6 SST	13
055	027-044	FASTENER, TIE, TWIST	1
056	212-1624-001	ENCLOSURE, SIDE, RIGHT	1
057	212-2589-001	CABLE ASSY, PRESS SNSR 30	2
058	212-2595-001	CABLE ASSY, RFID	1
059	212-2596-001	CABLE ASSY, PNEU, INTERFACE W122	1
065	699-010	FILTER, MECH, 2.4X.82, 25 MICRON	2
066	893-500	FITTING, L, 10-32M X .156 TUBE	1
068	040-073	TUBING, SILICONE, .125X.250	0.23
069	026-143	CLAMP, CABLE .31X.38, BLK NYL	1
071	892-042	ADHESIVE, THREADLOCKER, 242 BLUE	AR
072	891-028	LUBRICANT, GREASE, HIGH-VACUUM	AR
073	212-2750-001	PLATE, RETAINER, REG	1
074	212-2731-001	SHIELD, EMI, RJ45	1
075	893-746	FITTING, CONNECTOR, M INTER HEX	1
076	212-2760-001	BRACKET, SUPPORT, MUFFLER	1
077	212-2729-001	CONNECTOR, FLANGED, LOCKED	1
078	655-049	PLUG, HEX SKT, 1/16NPT X 5/32HEX	2
079	807-004	SCREW, CAP HD SKT, M3X10 SST	6
080	807-010	SCREW, CAP HD SKT, M3X35 SST	4
081	895-343	REGULATOR, W/O MANF, 120PSIG	1
082	811-003	SCREW, FLAT HD SKT, M3X10 SST	1
083	212-2840-001	BRACKET, GROUNDING OFFSET	1
084	212-2895-551	ASSY, PCB, X-VALVE, AIR_	1

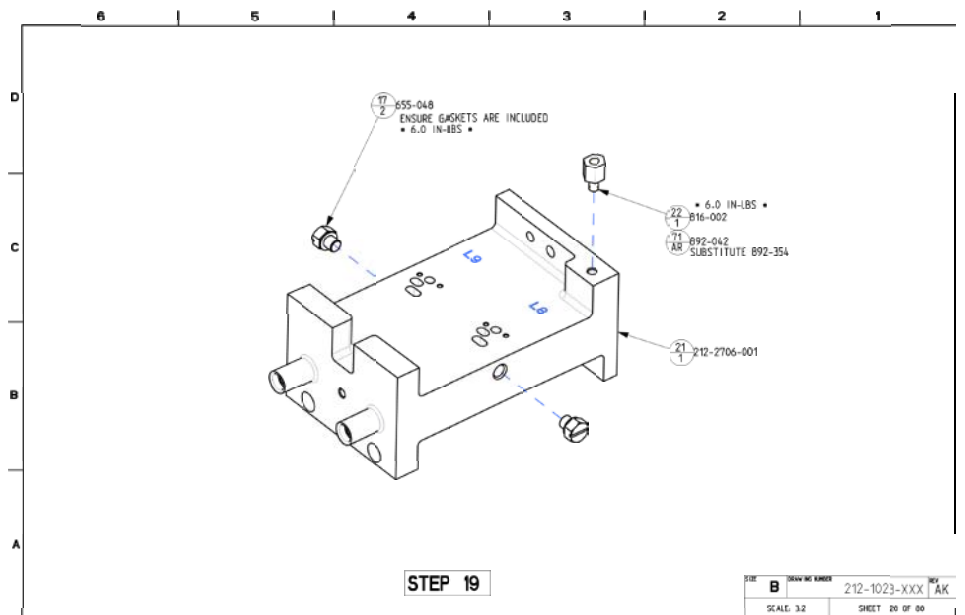
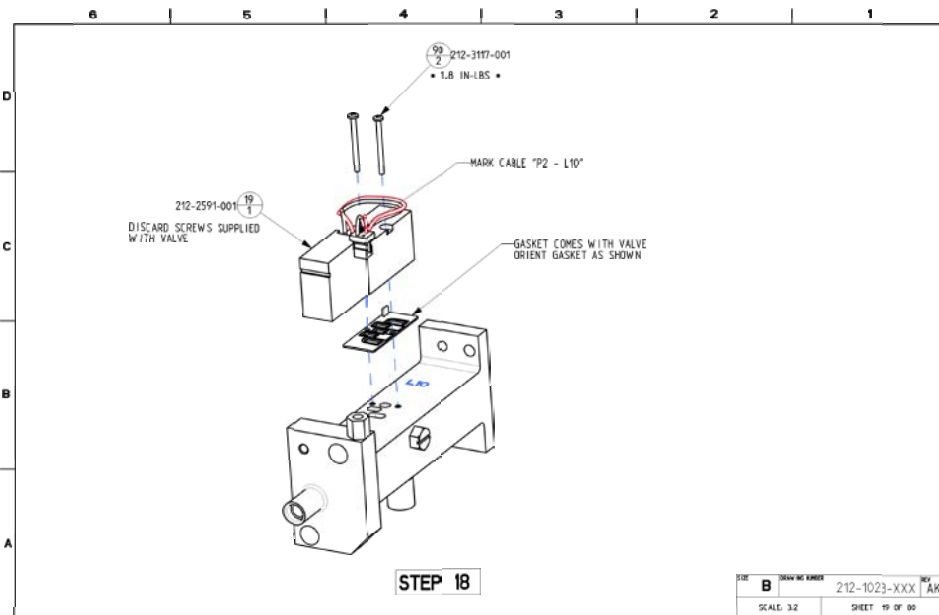
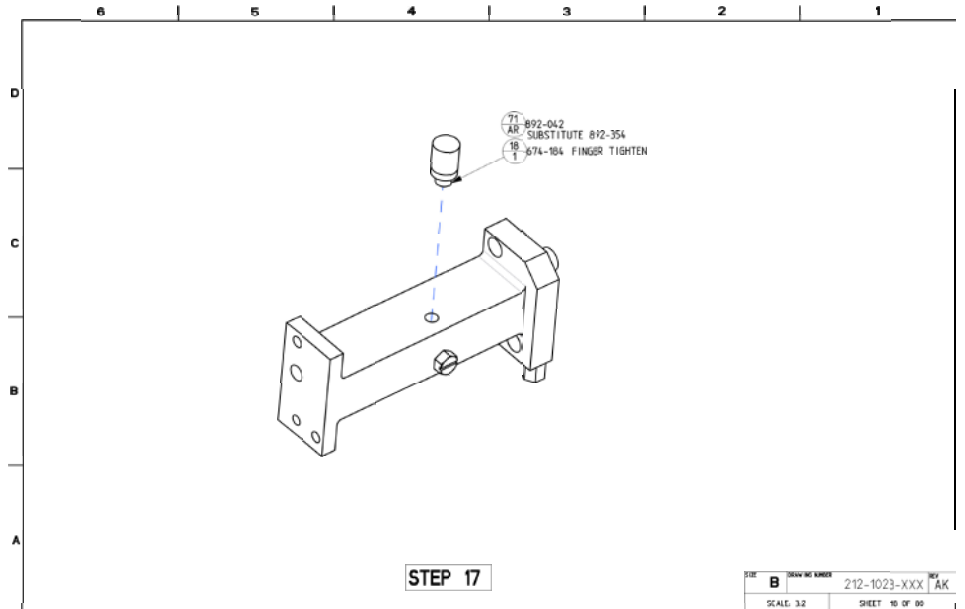
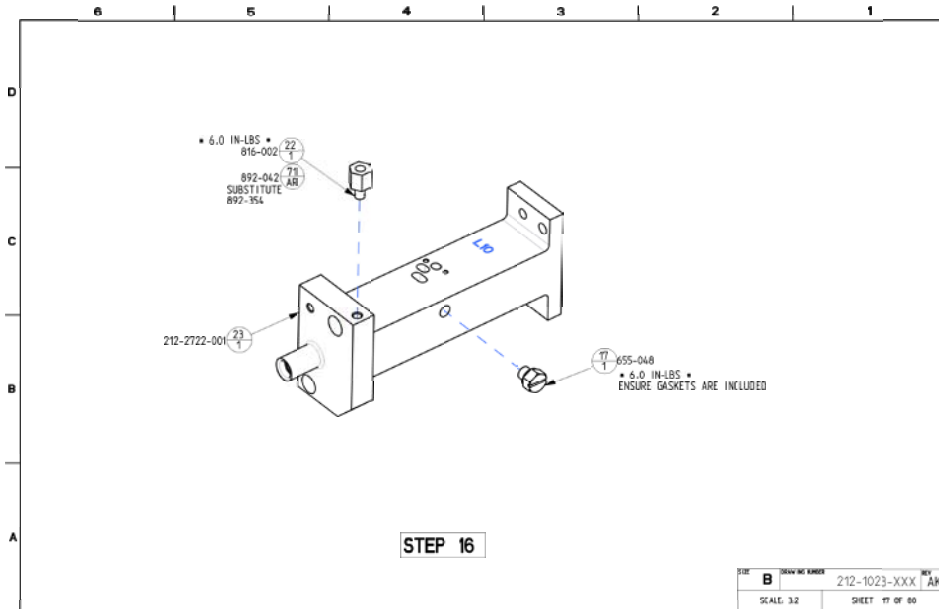
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086	212-2890-001	TUBING, 1/8X1/16, RED 85A .7FT	1
087	212-2889-001	TUBING, 5/32X1/16, BLU 85A .7FT	1
088	827-009	SCREW, CAP HD, M2X0.45X14 W/CT	8
089	212-3117-001	SCREW, PH PH, M1.7X18 SST	10
090	212-3149-001	SHIM, MANIFOLD	5
091	807-183	SCREW, CAP HD SKT, M3X25 SST	2
092	827-003	SCREW, CAP HD, M2.5X0.45X12 W/CT	4
AR = As Required			

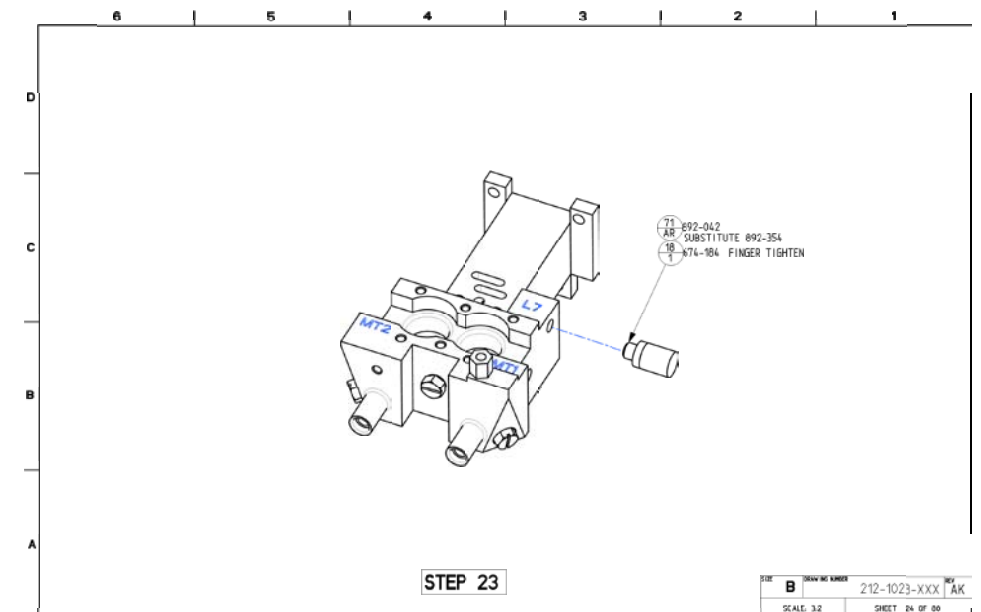
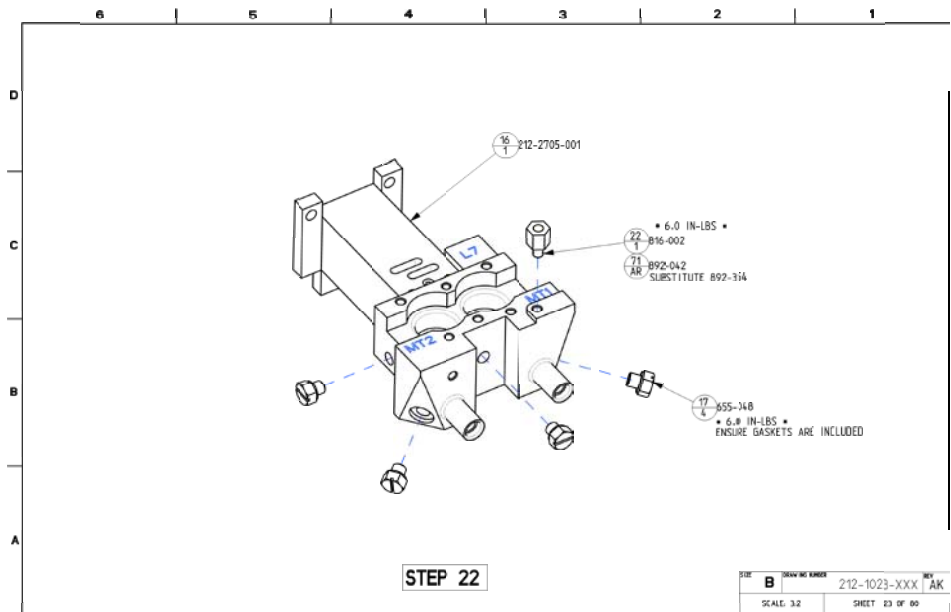
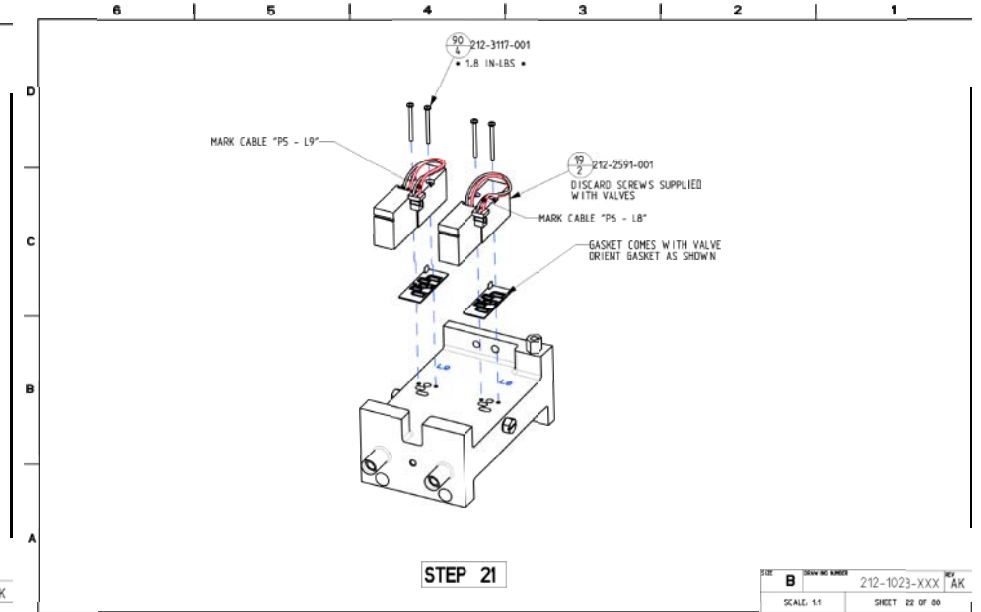
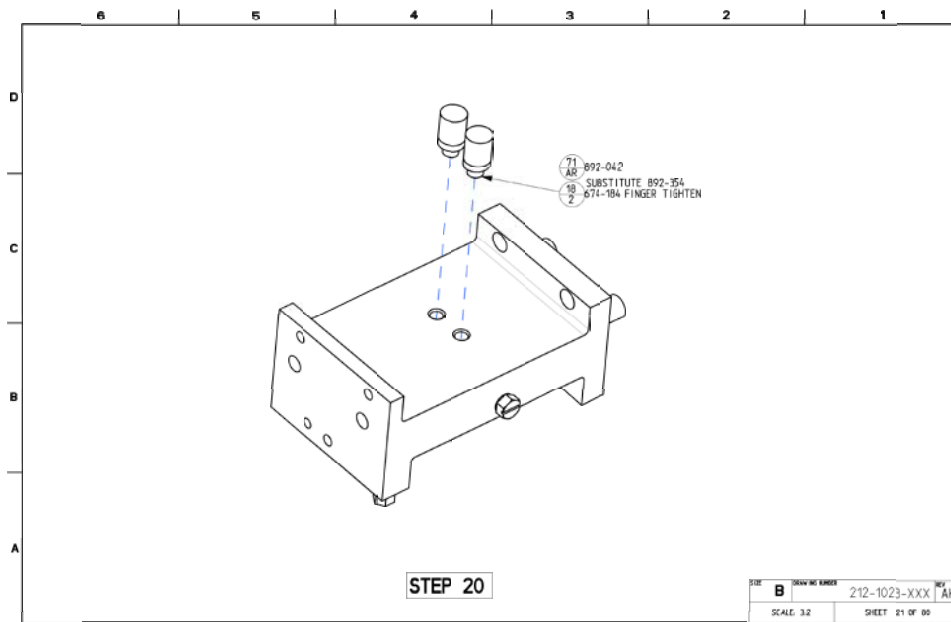


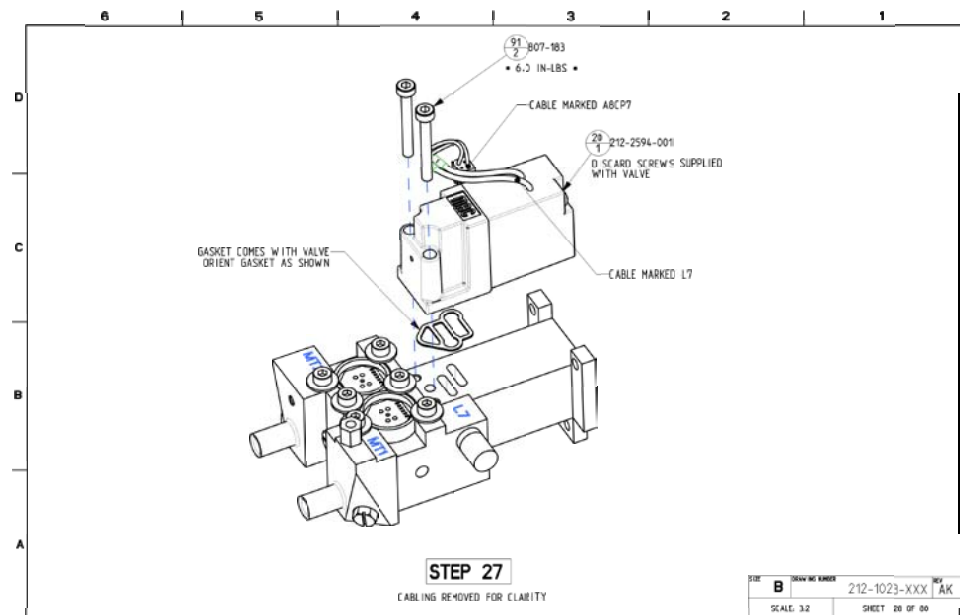
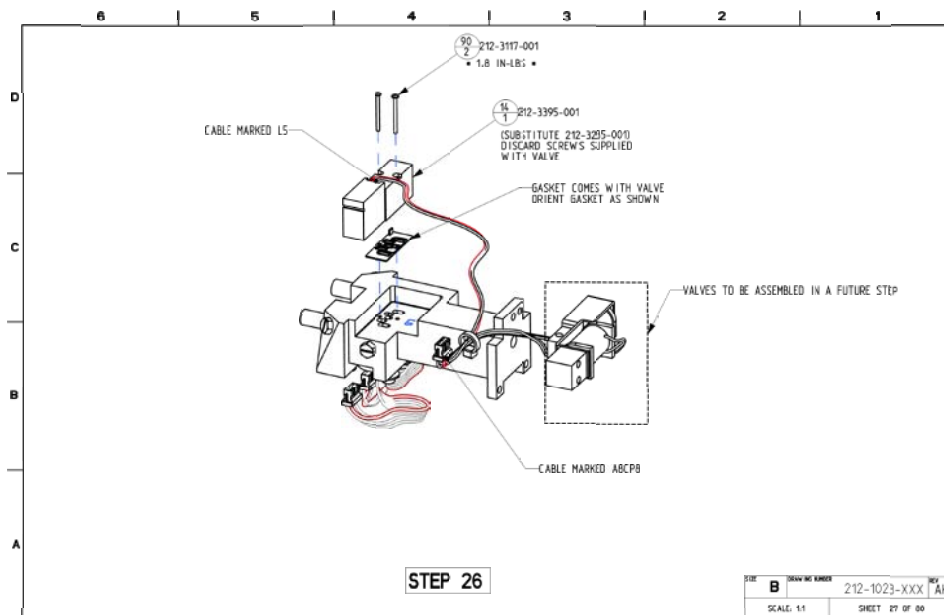
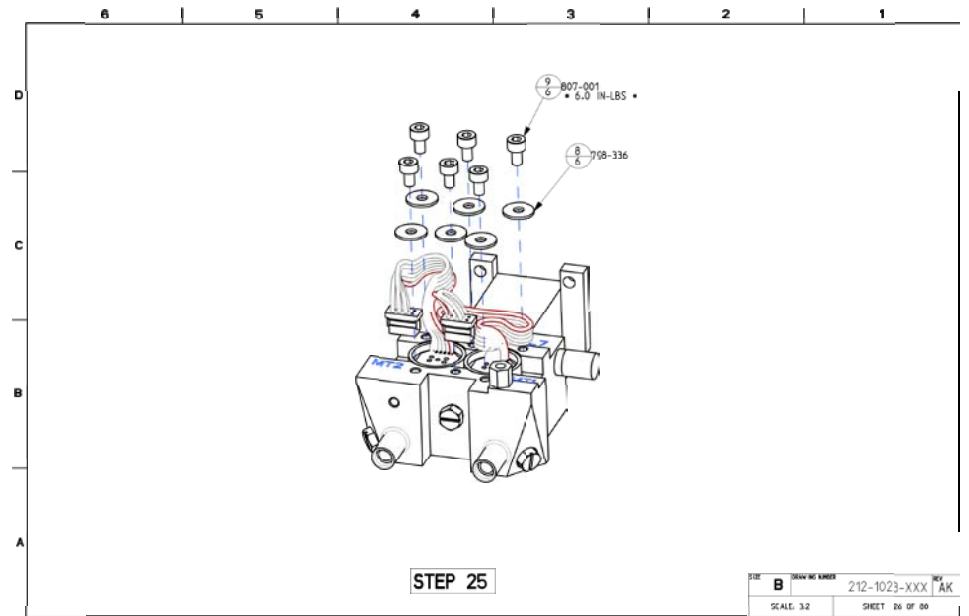
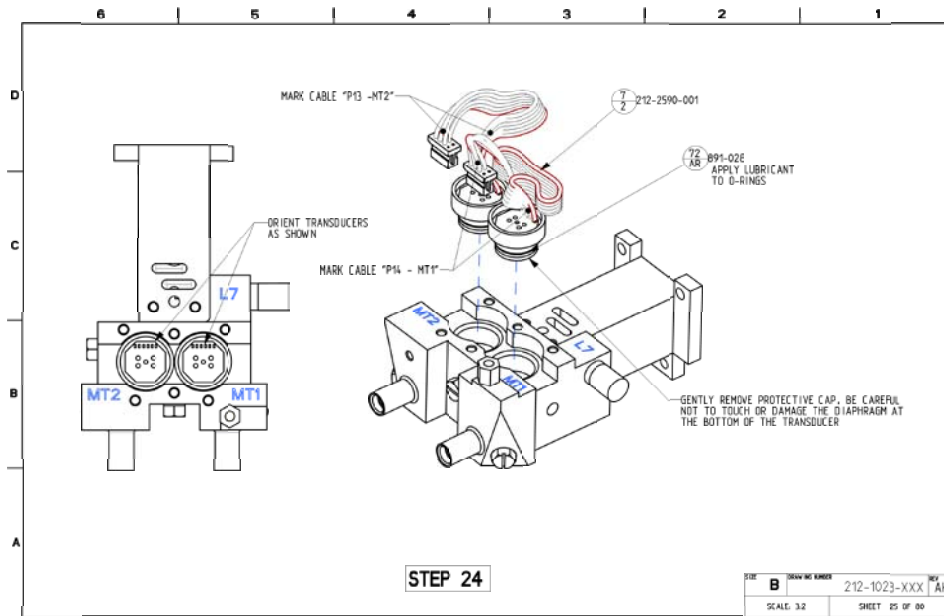


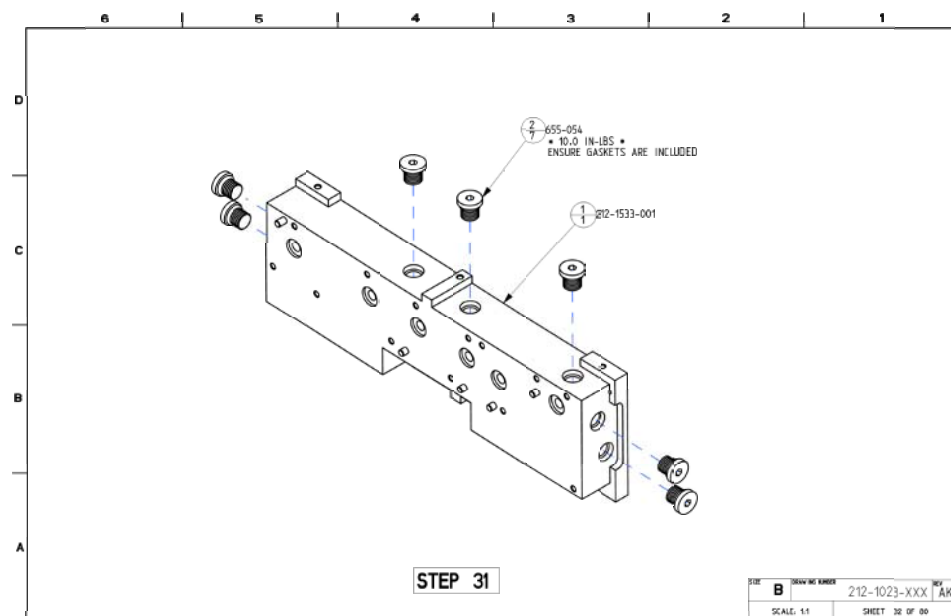
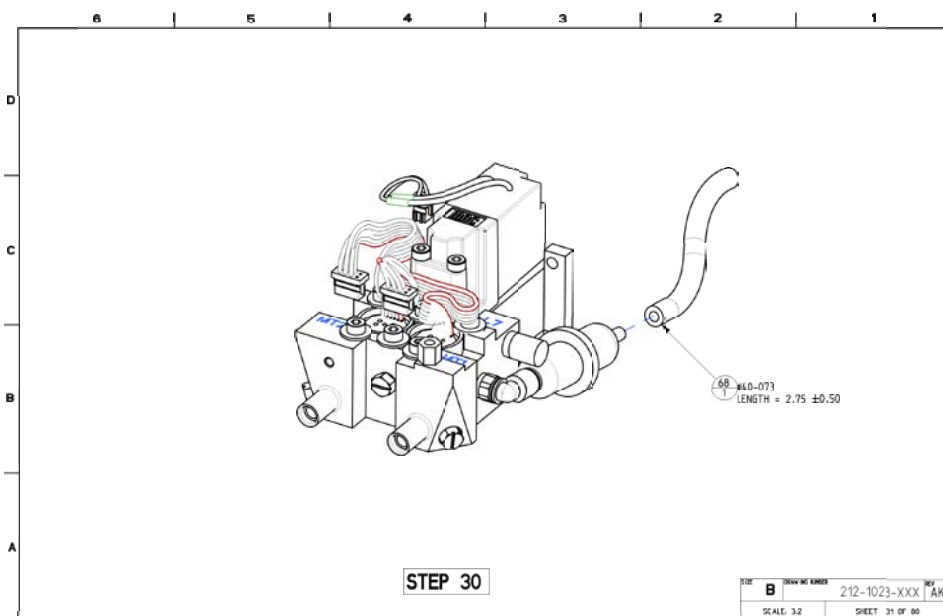
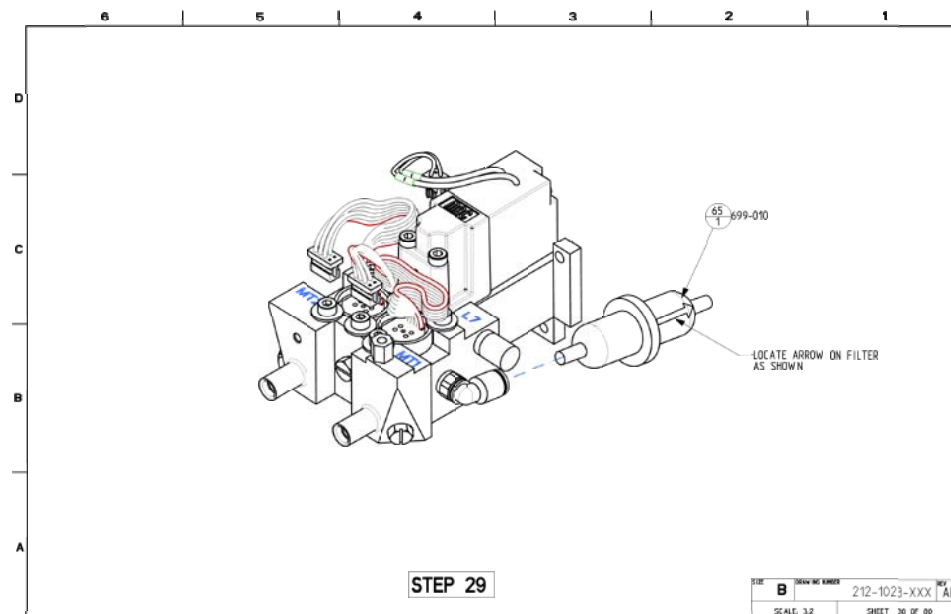
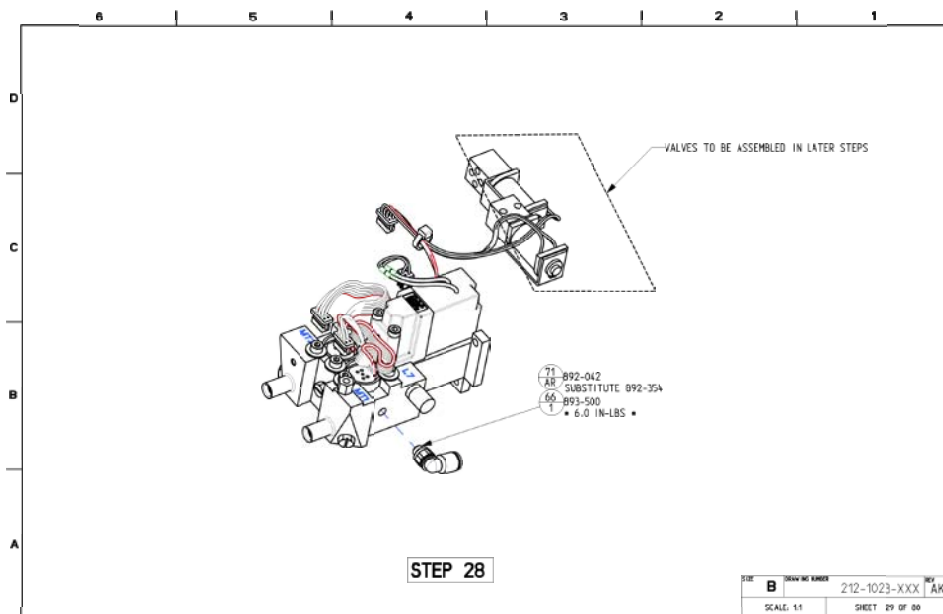


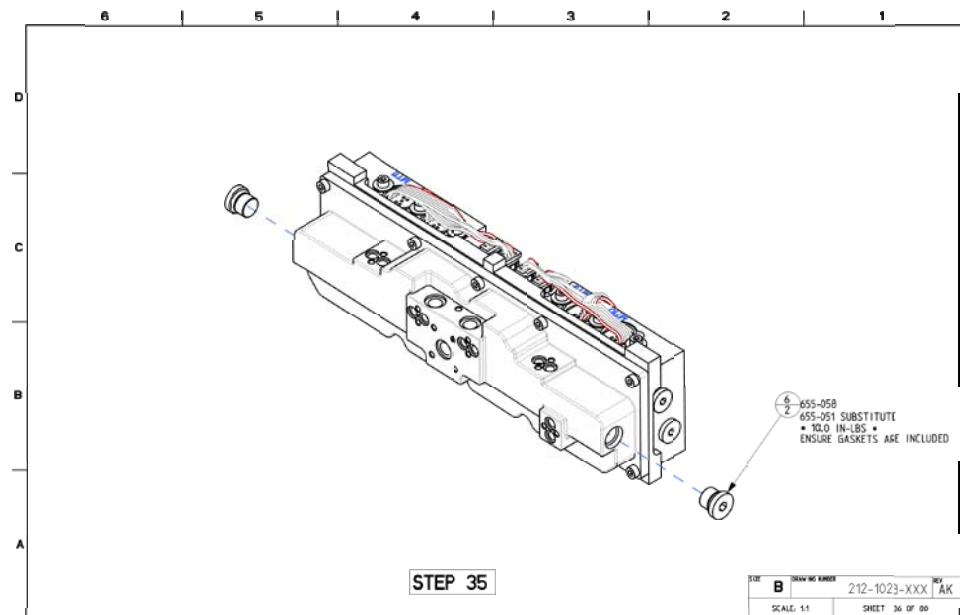
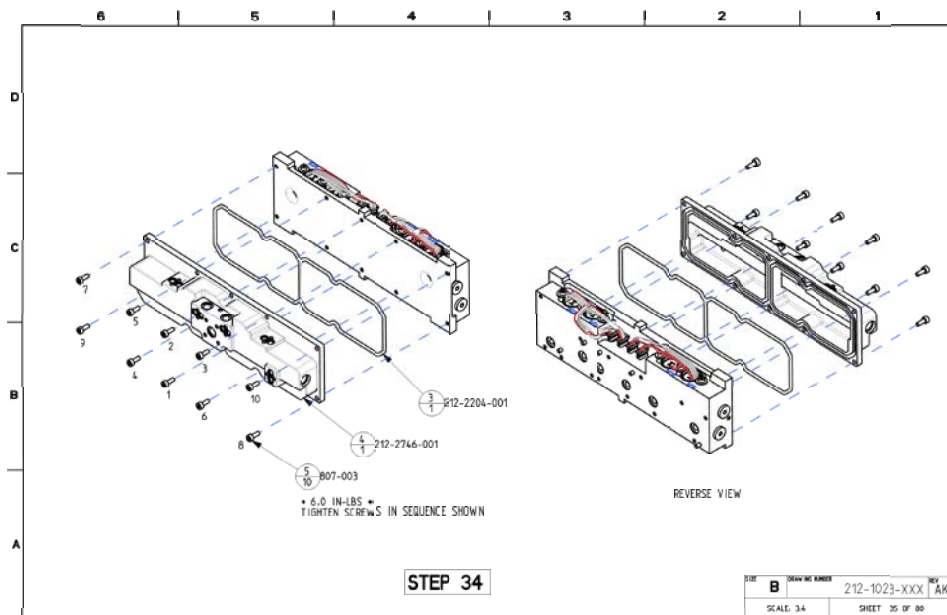
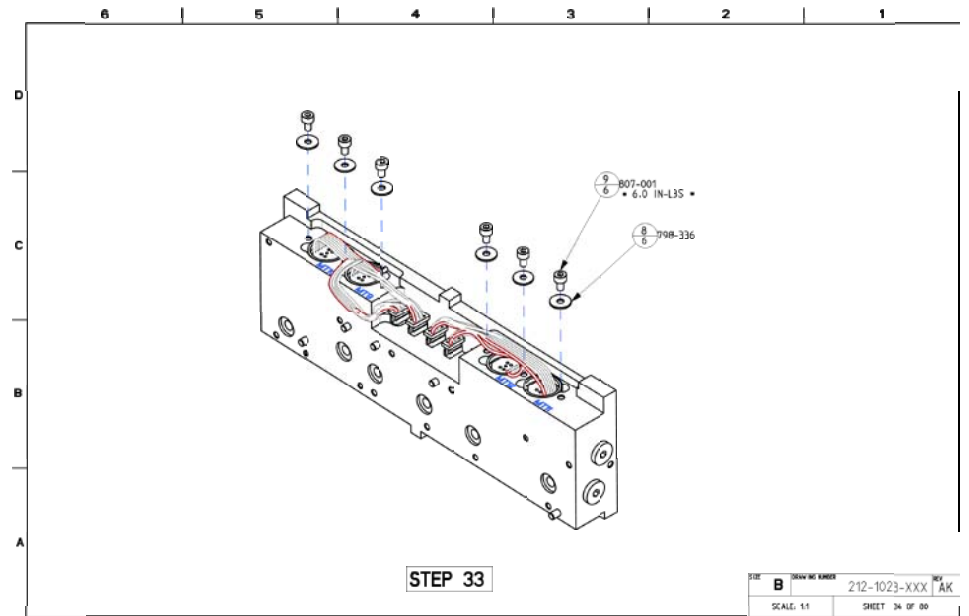
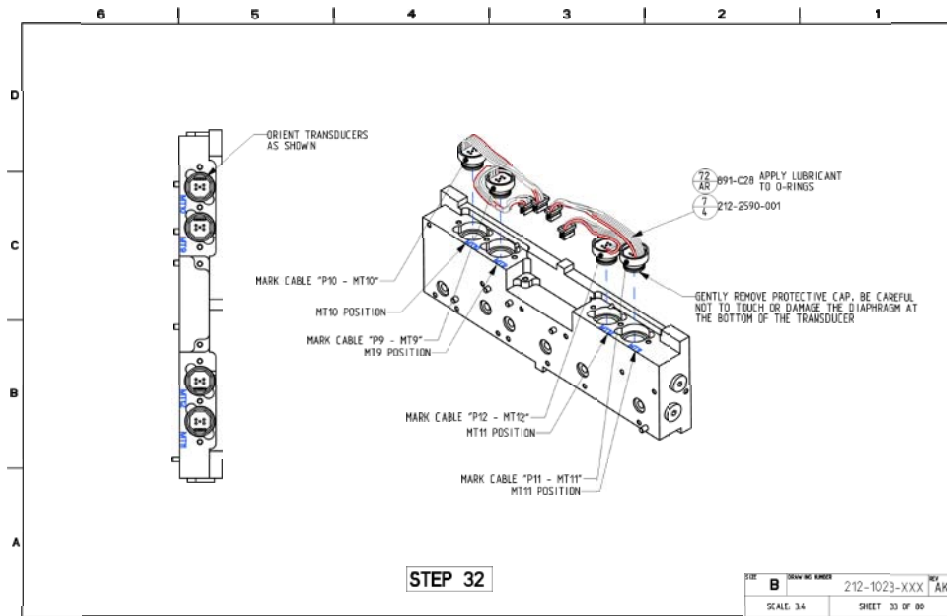


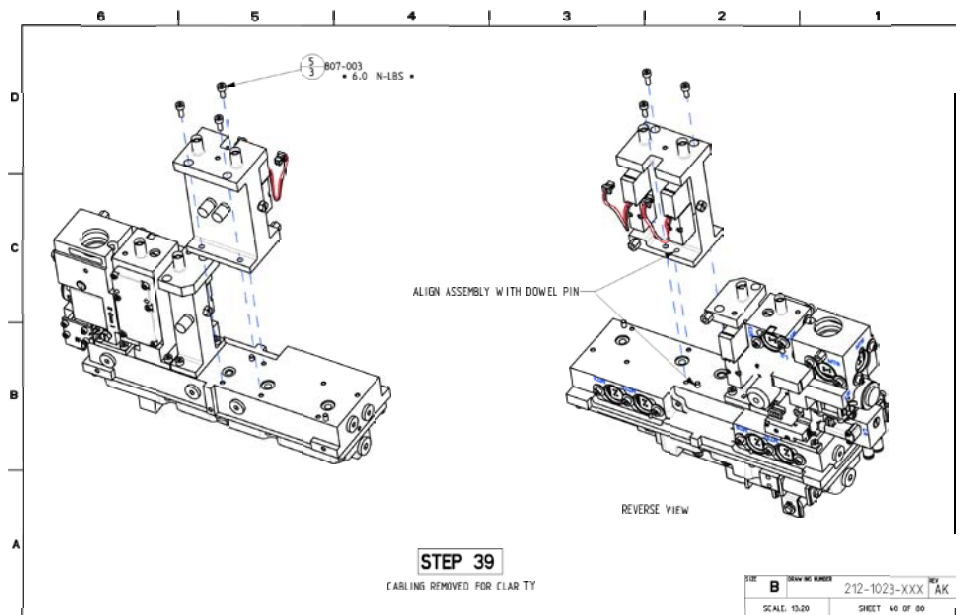
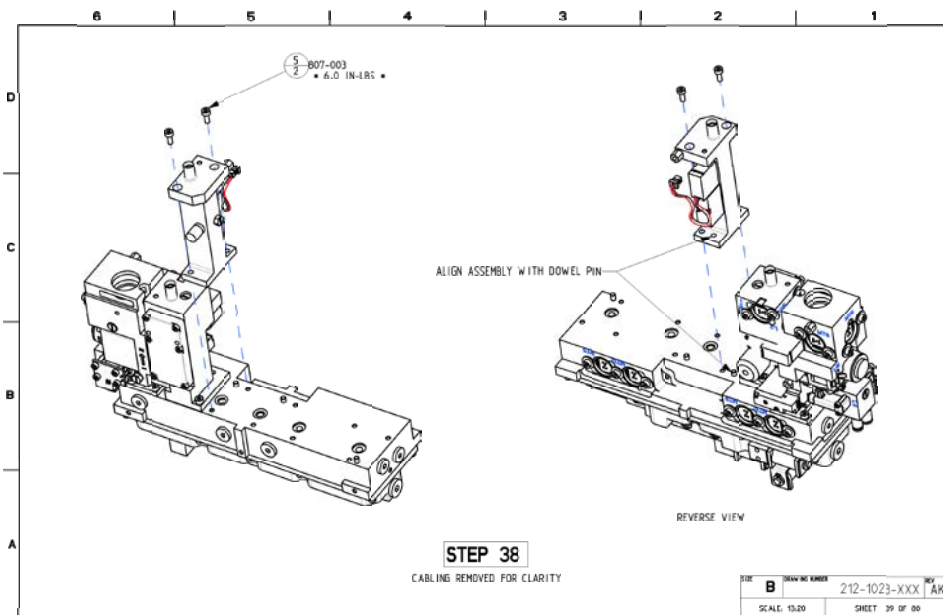
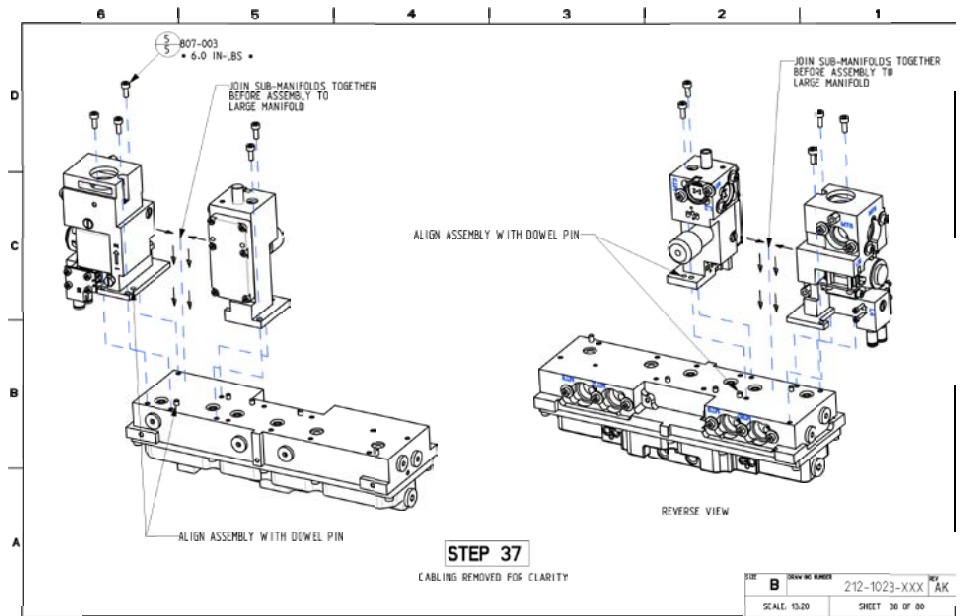
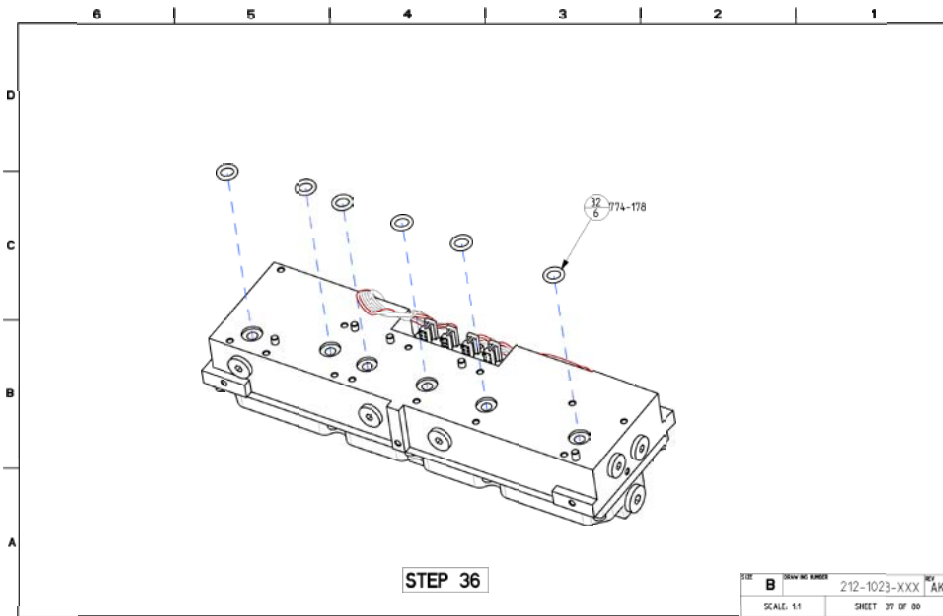


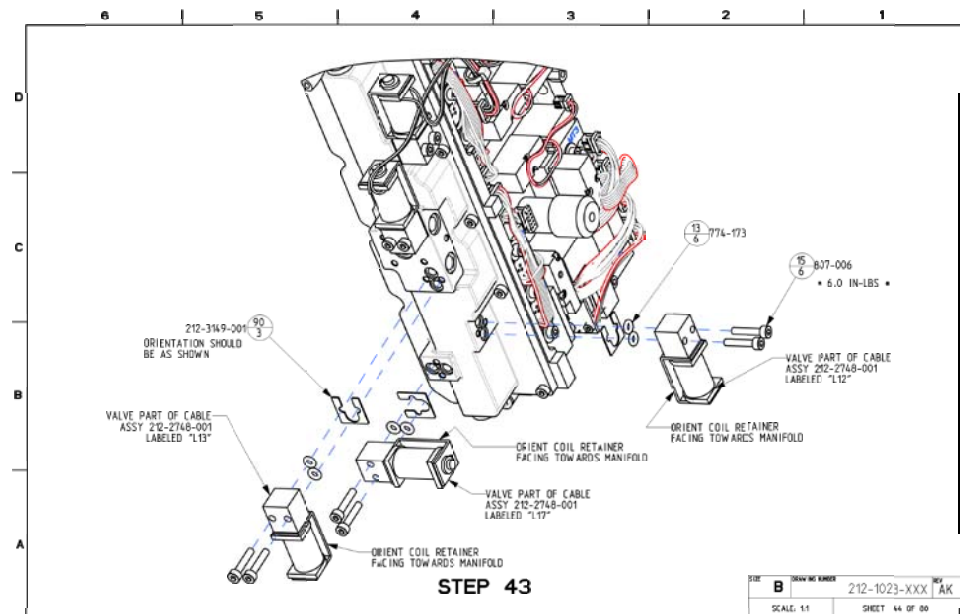
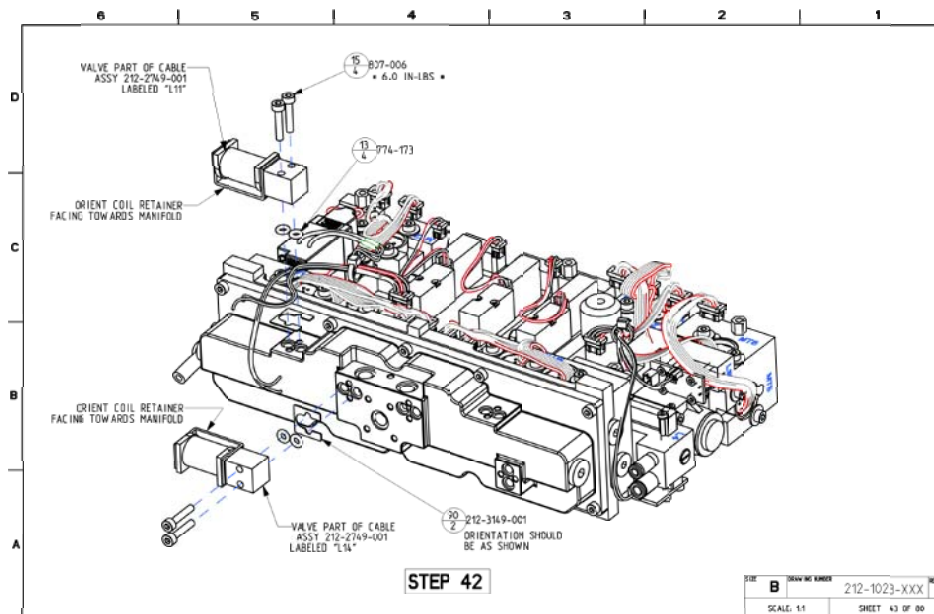
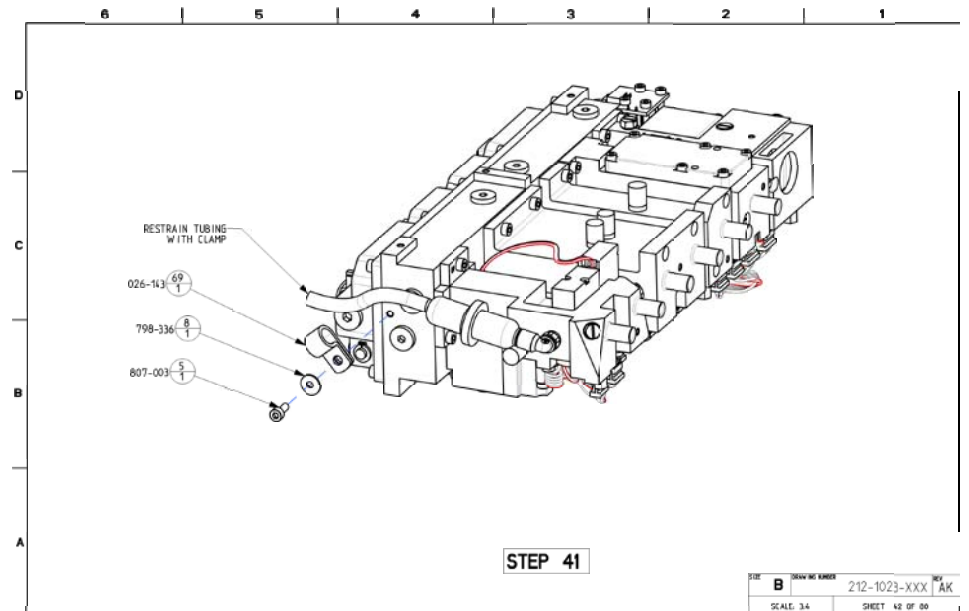
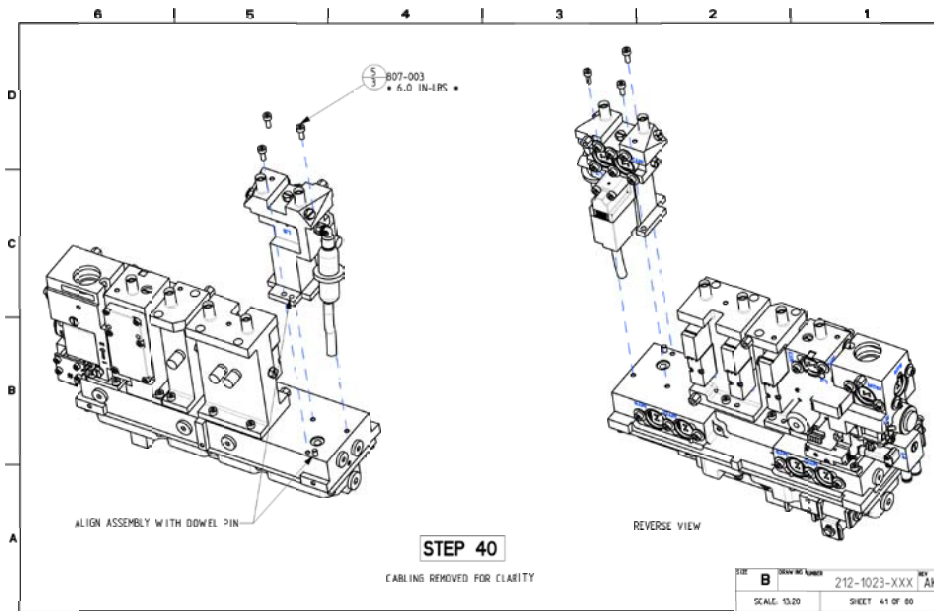


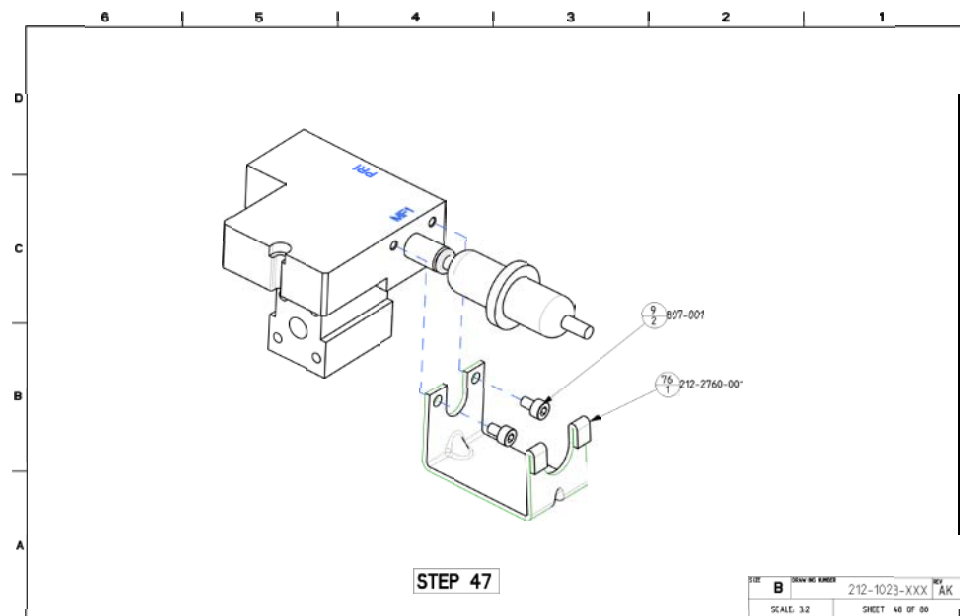
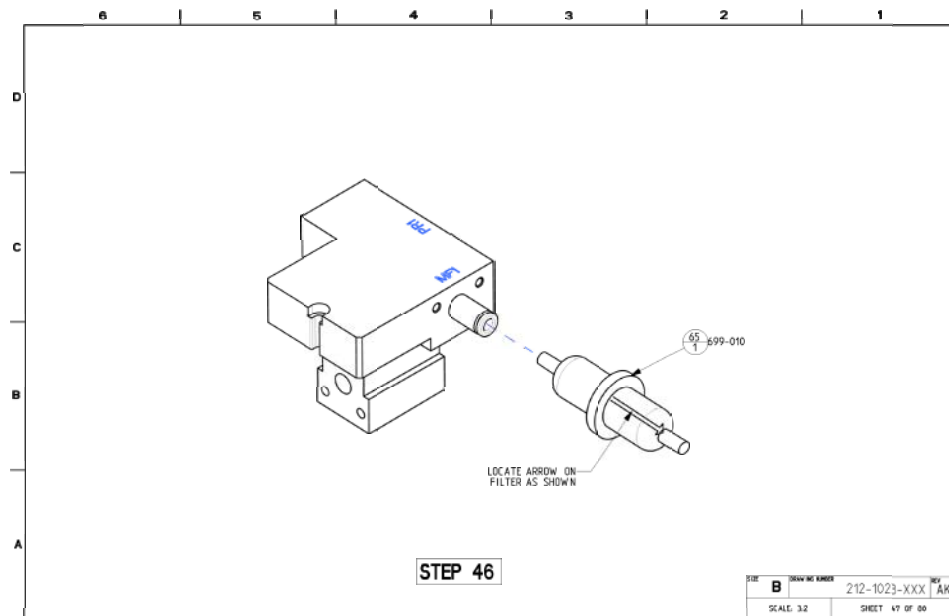
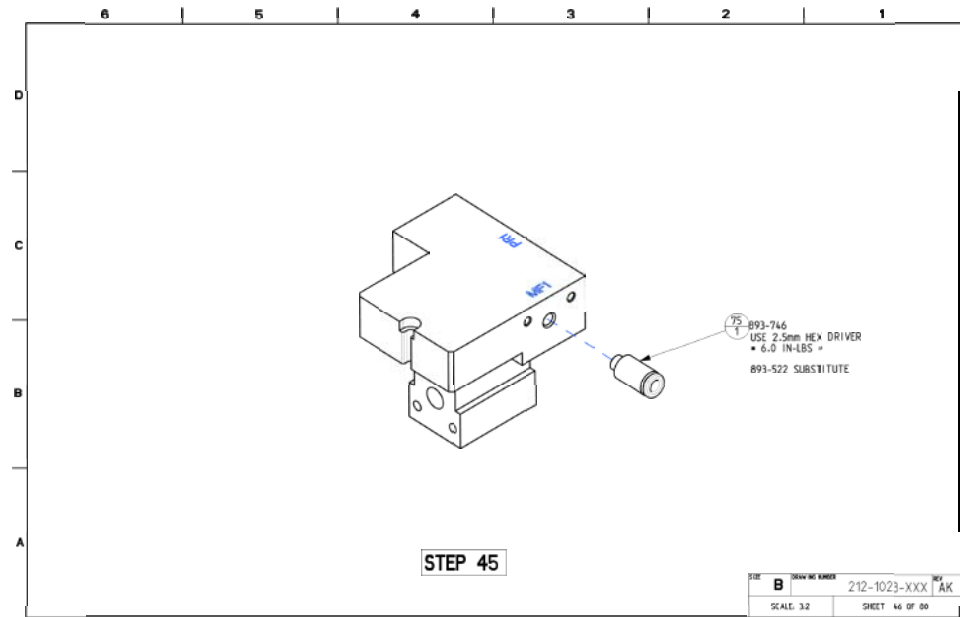
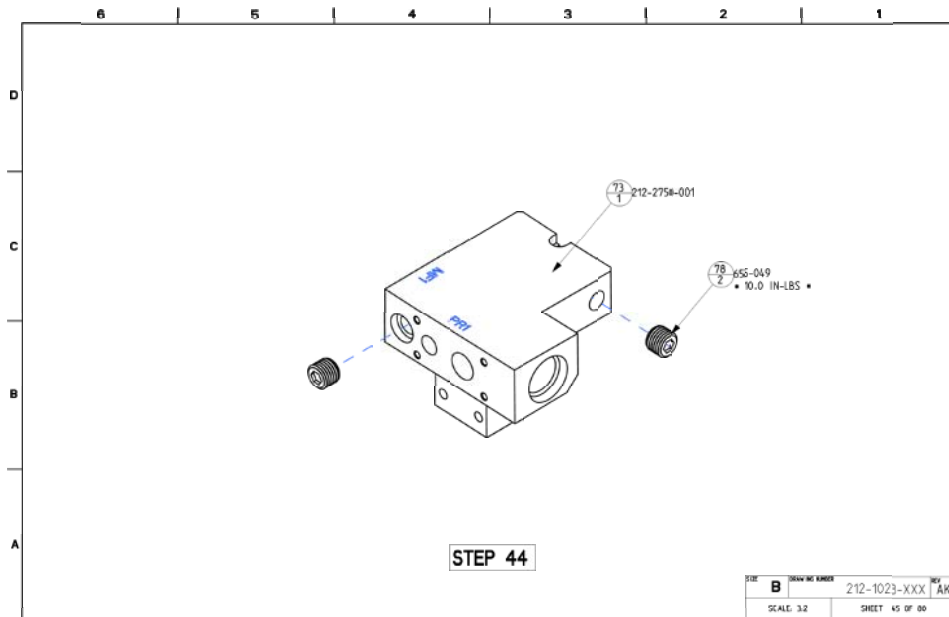


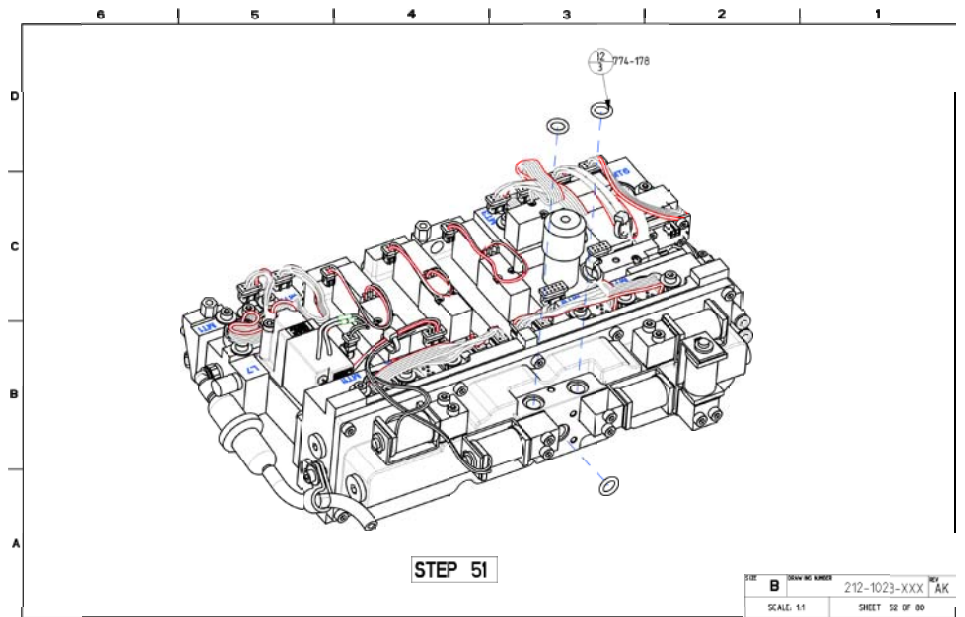
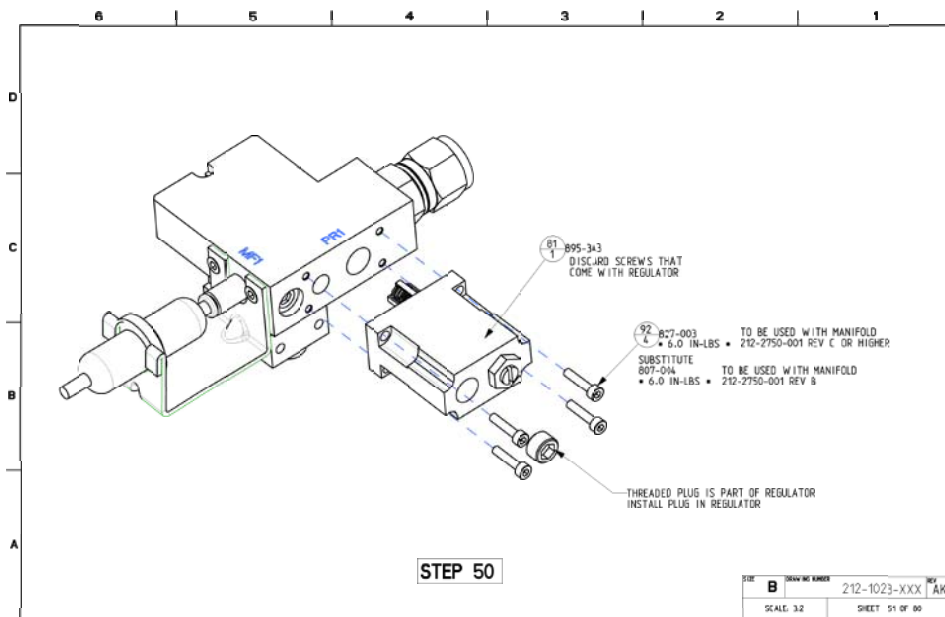
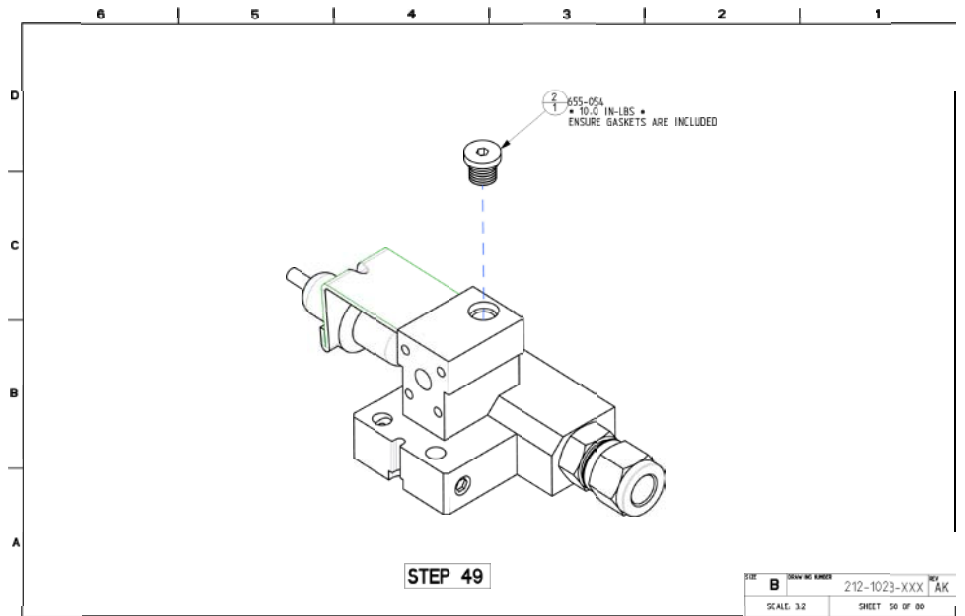
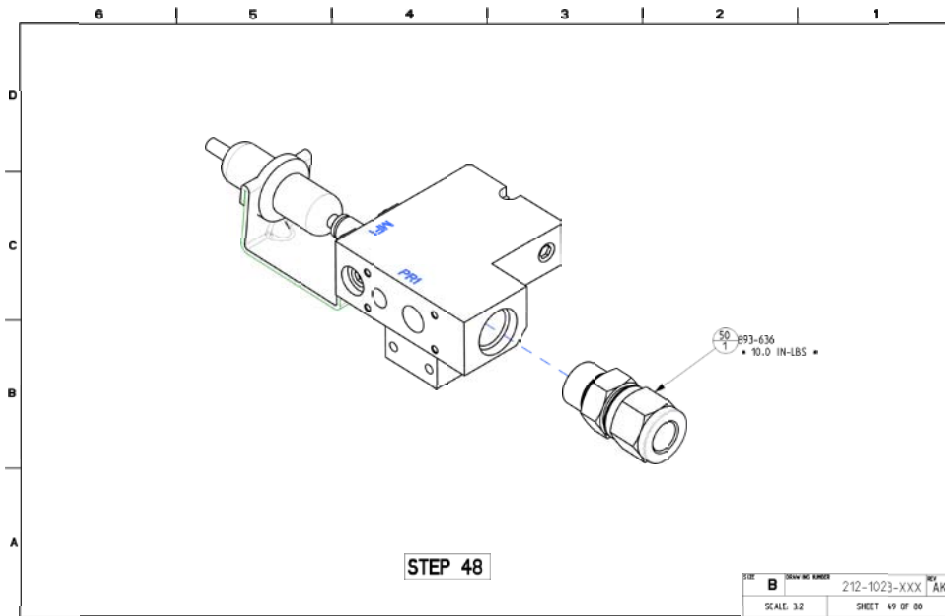


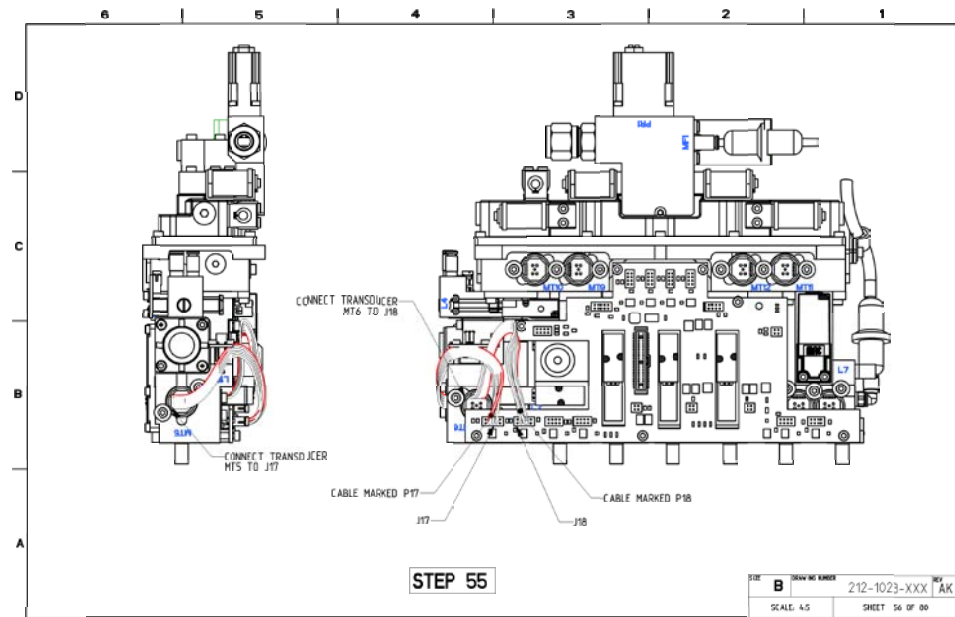
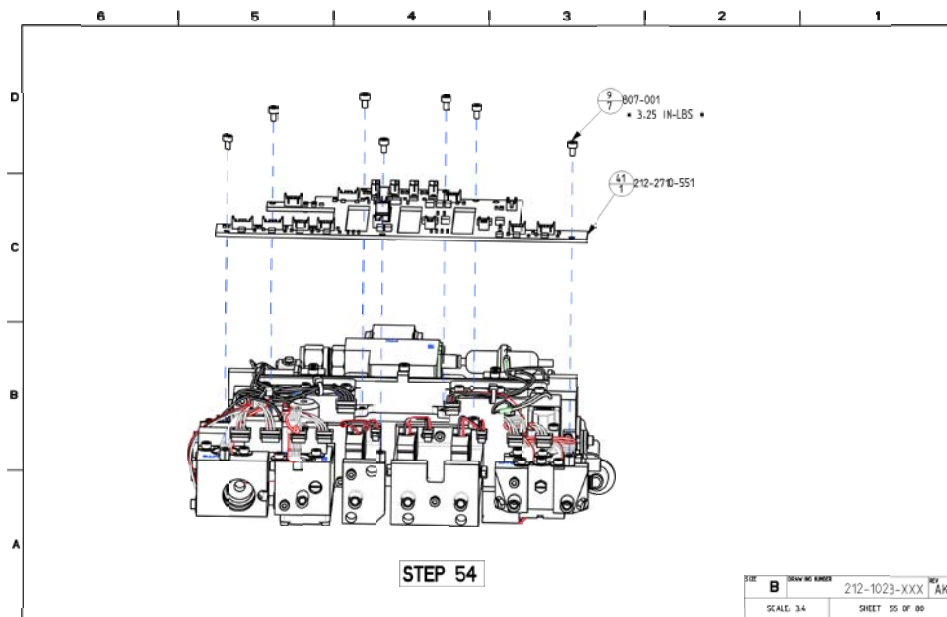
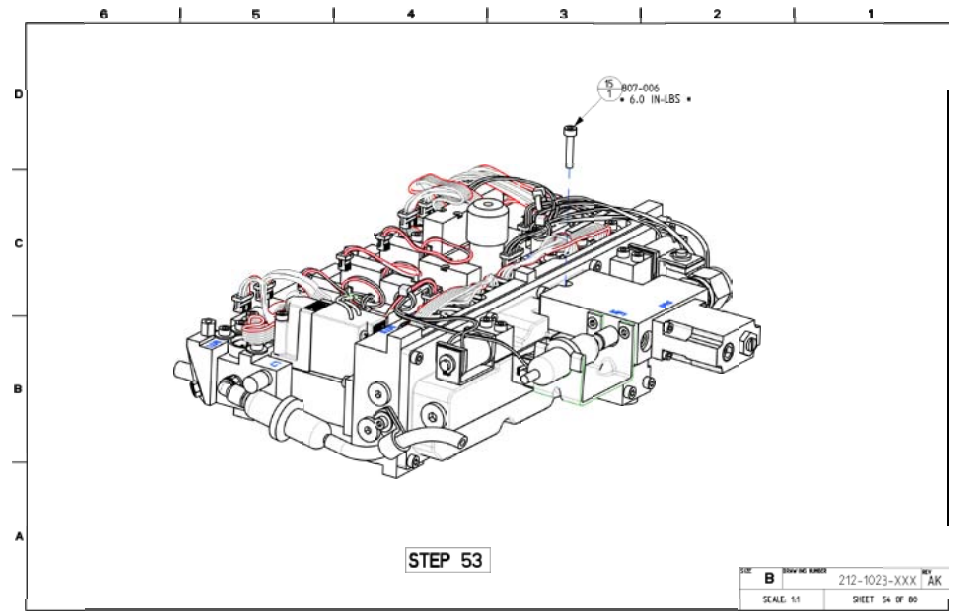
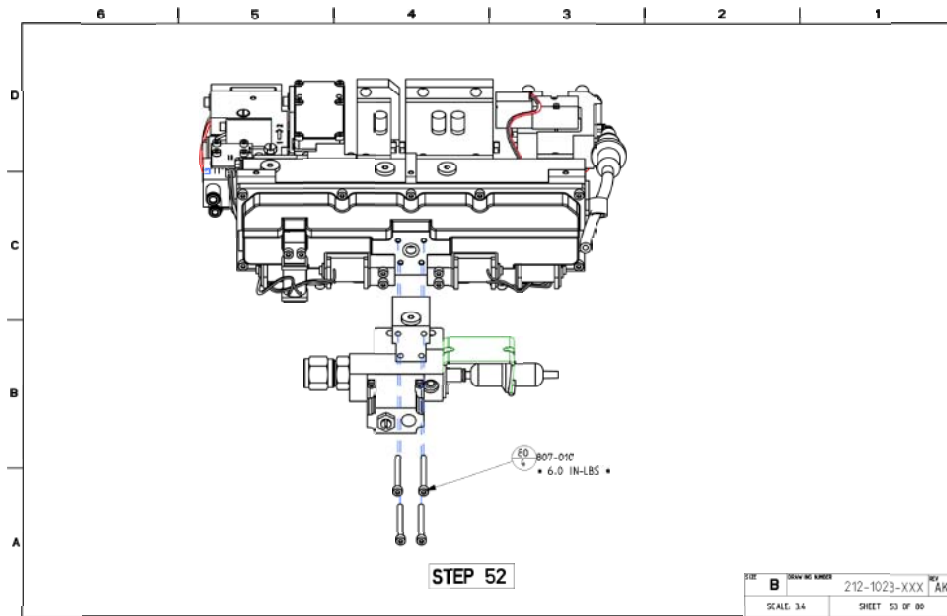


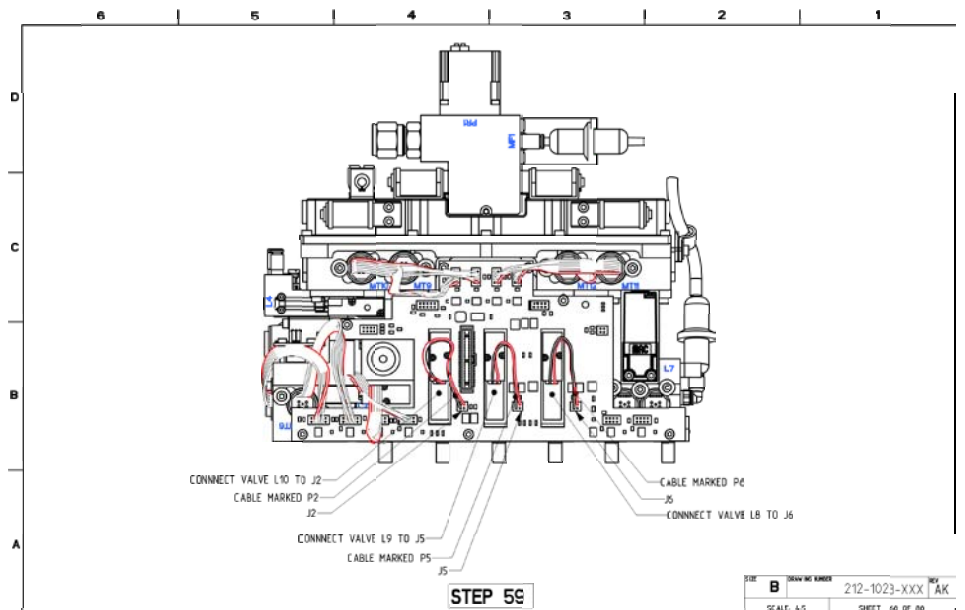
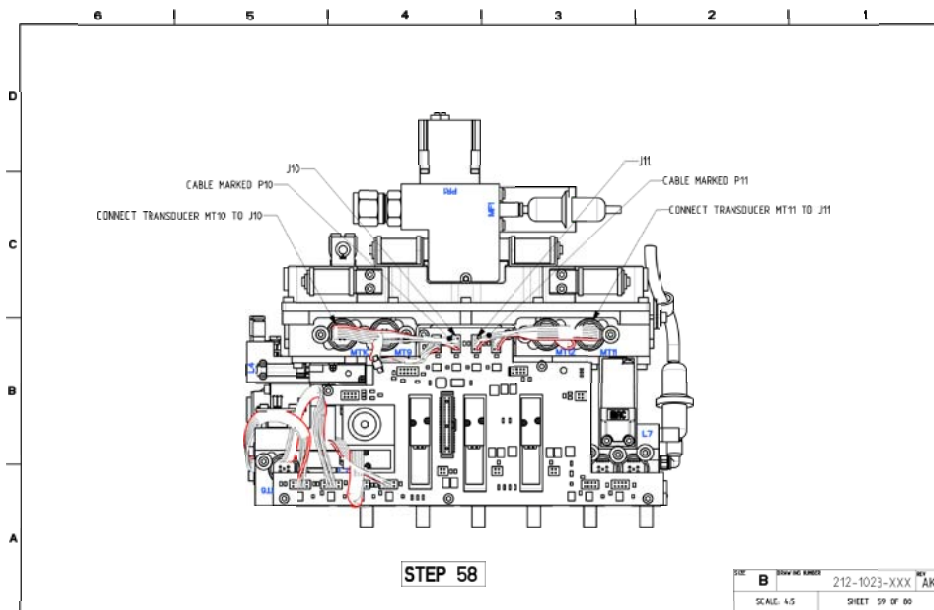
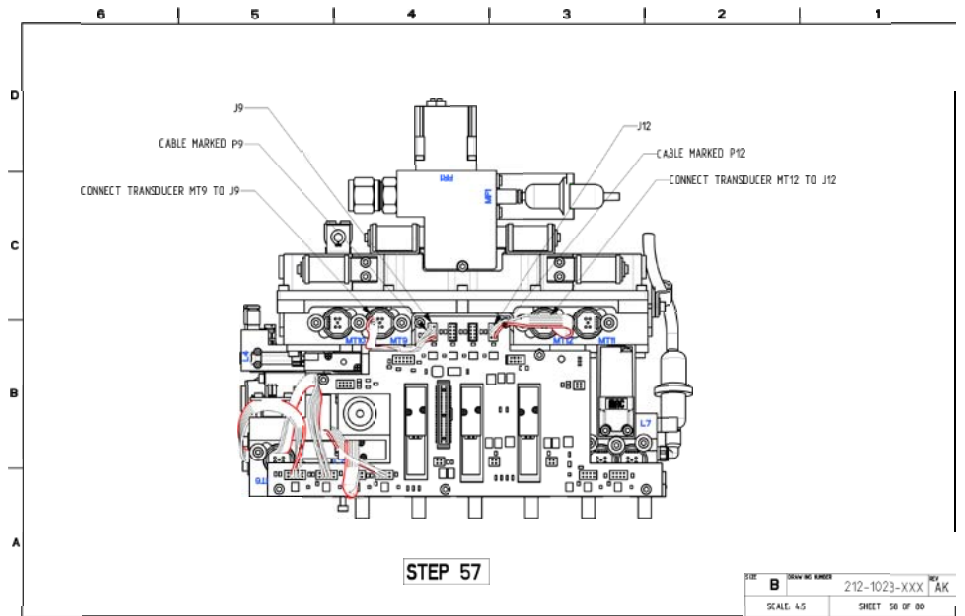
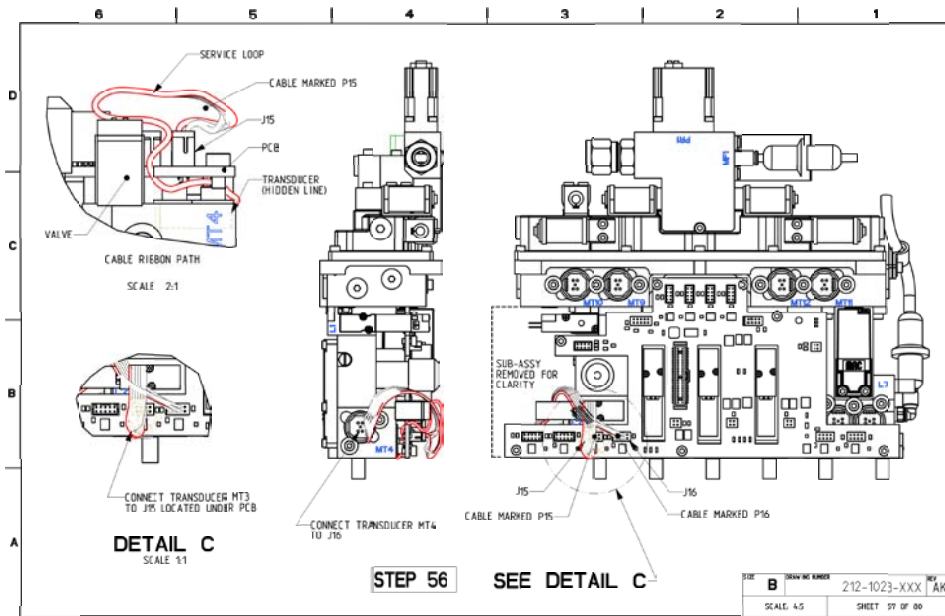


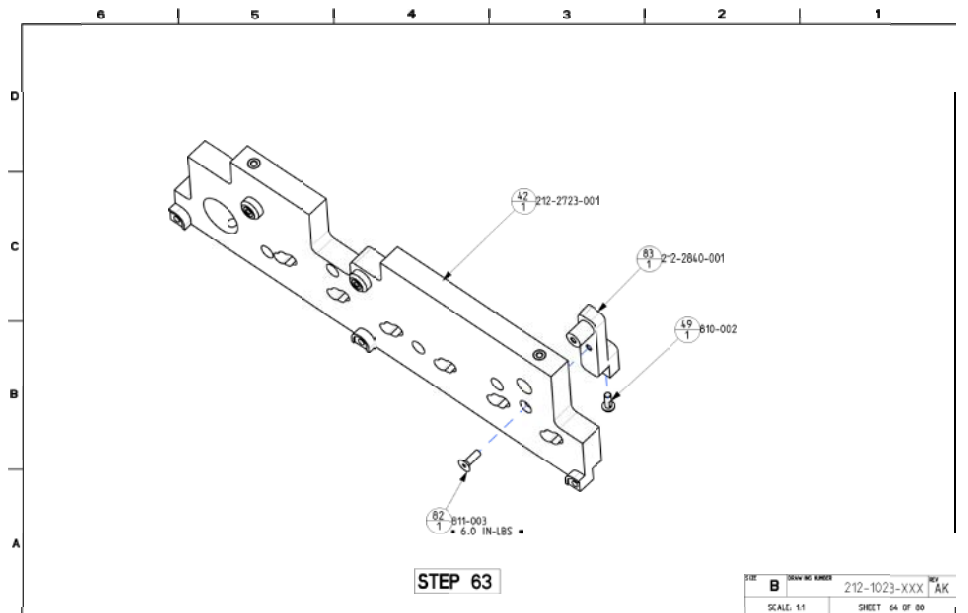
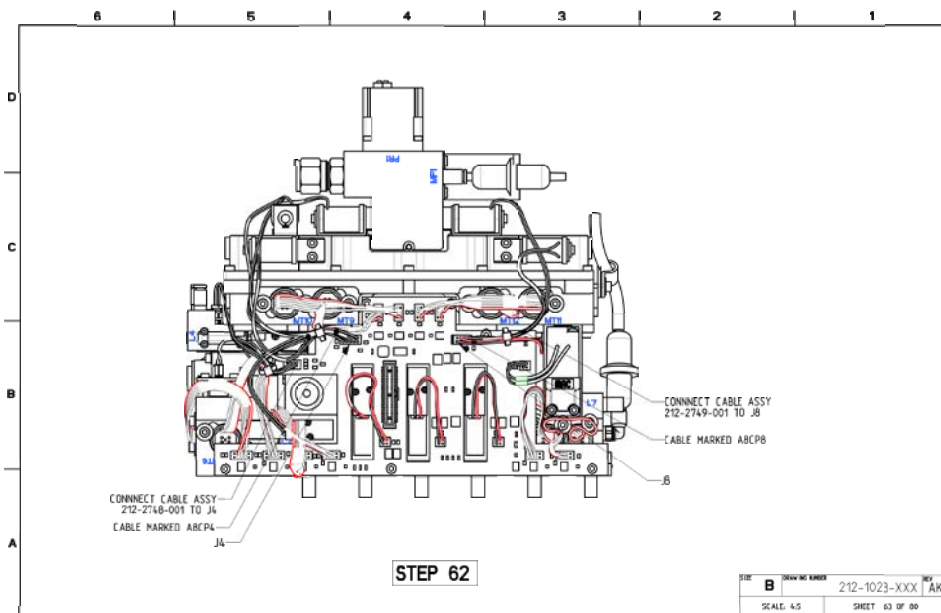
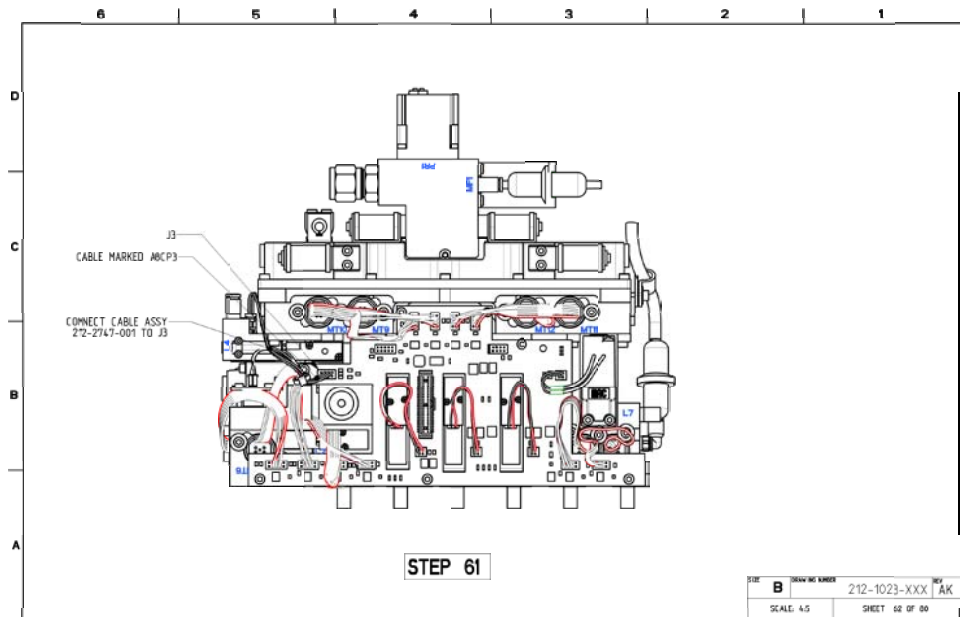
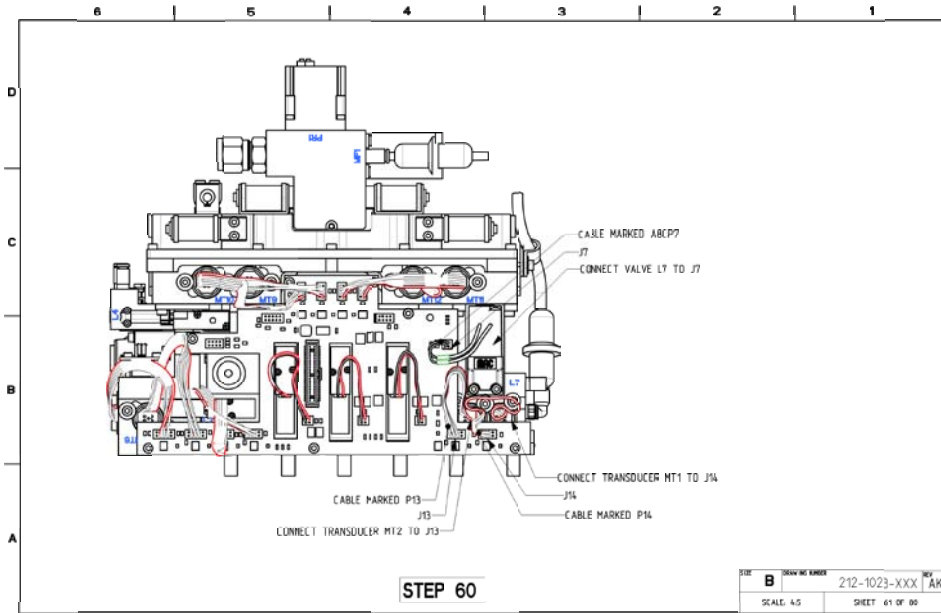


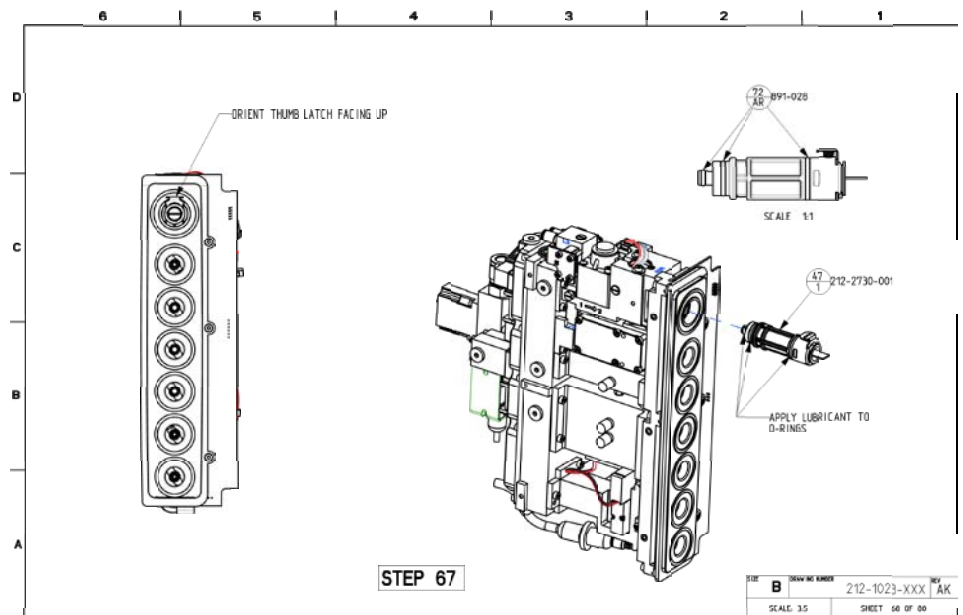
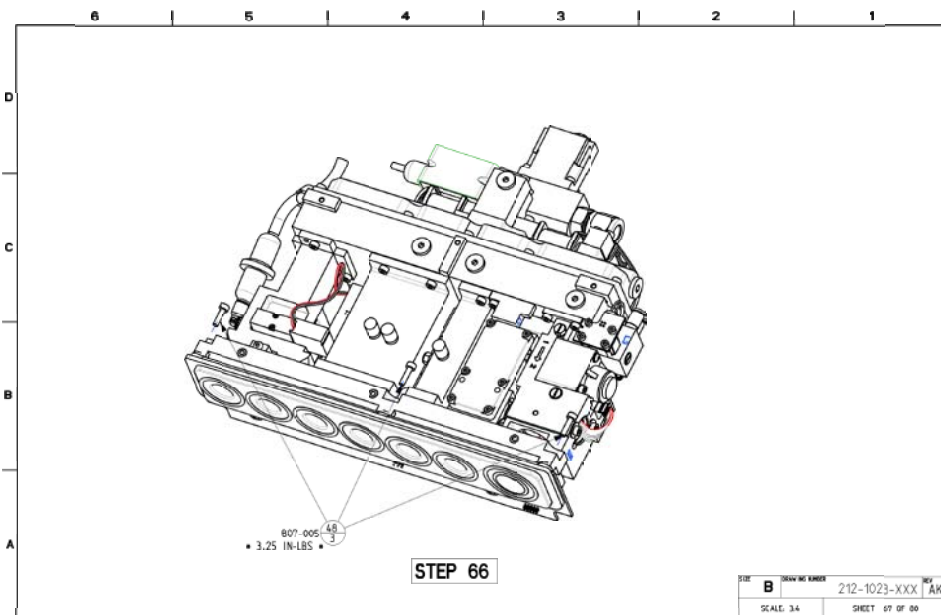
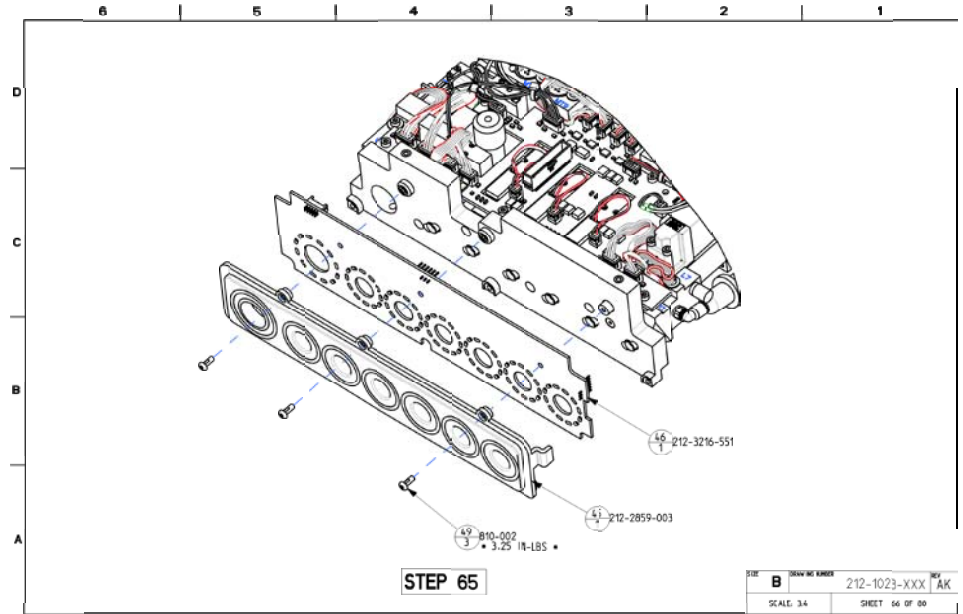
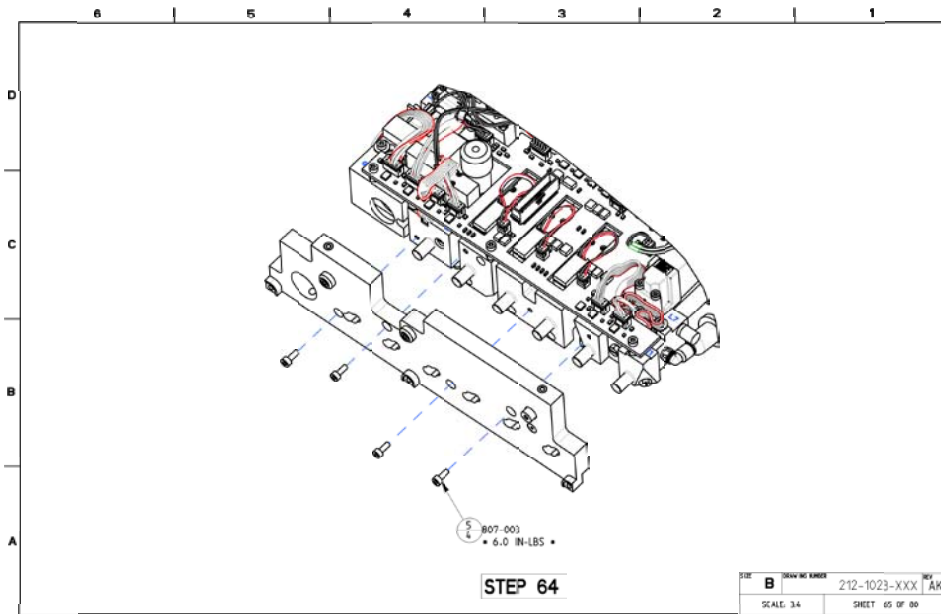


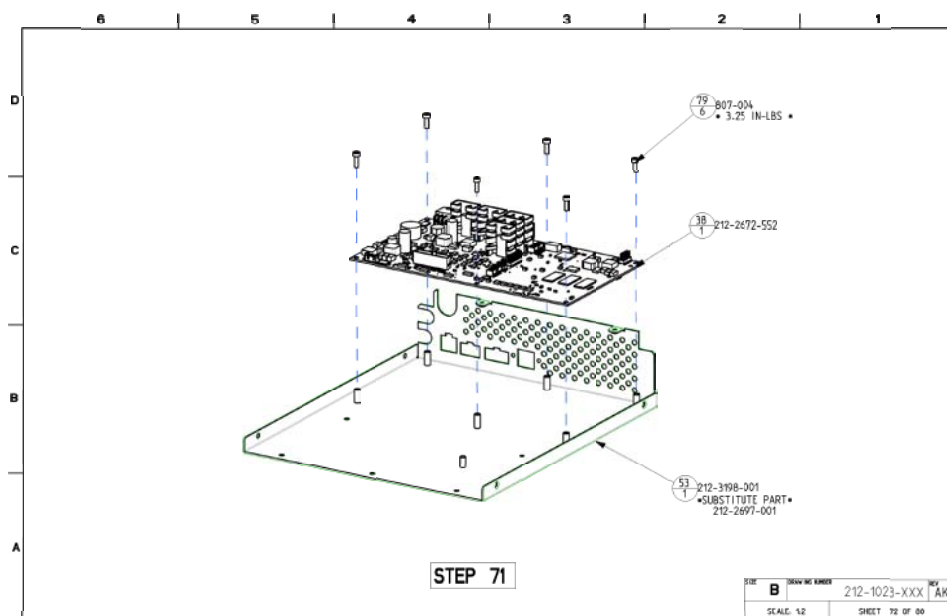
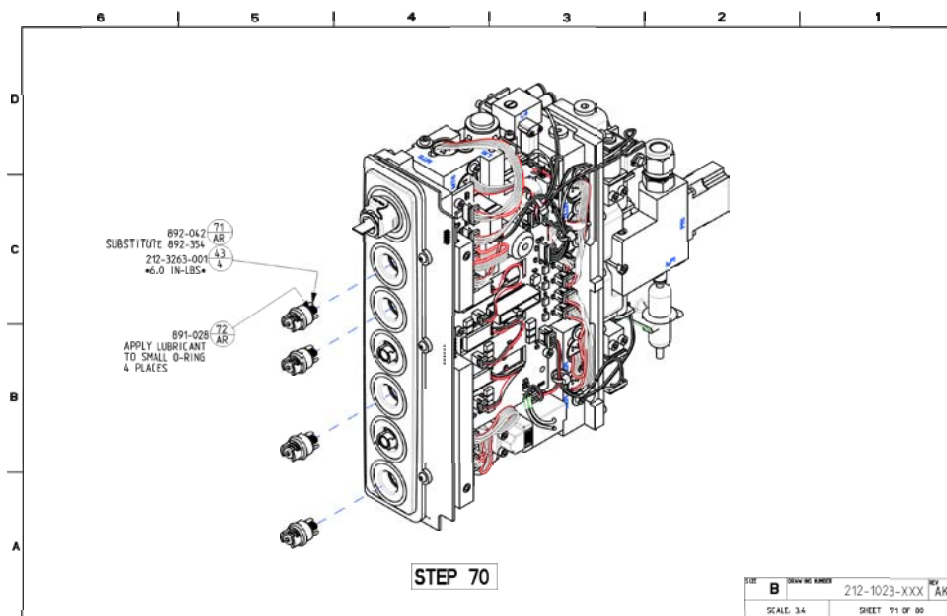
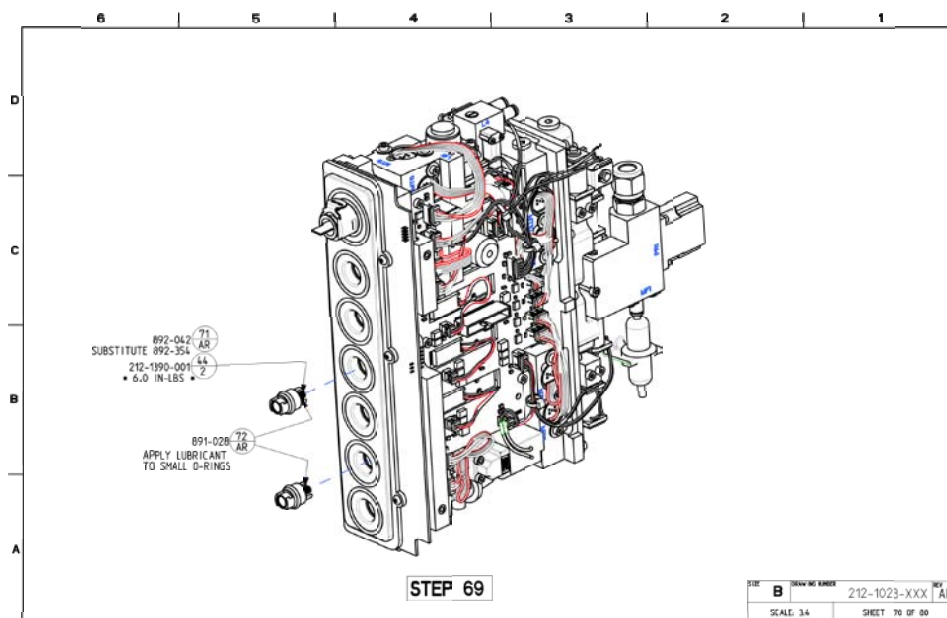
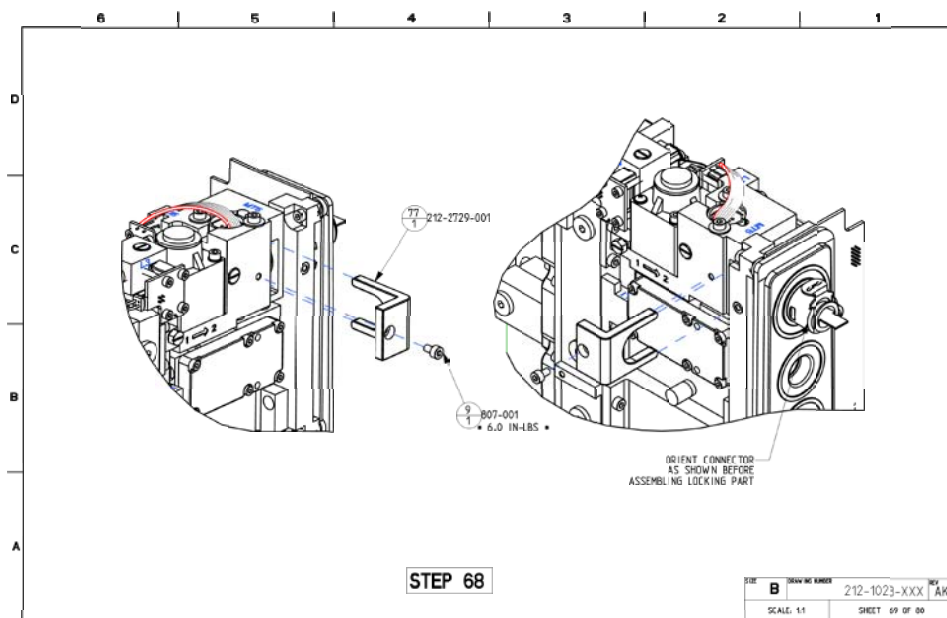


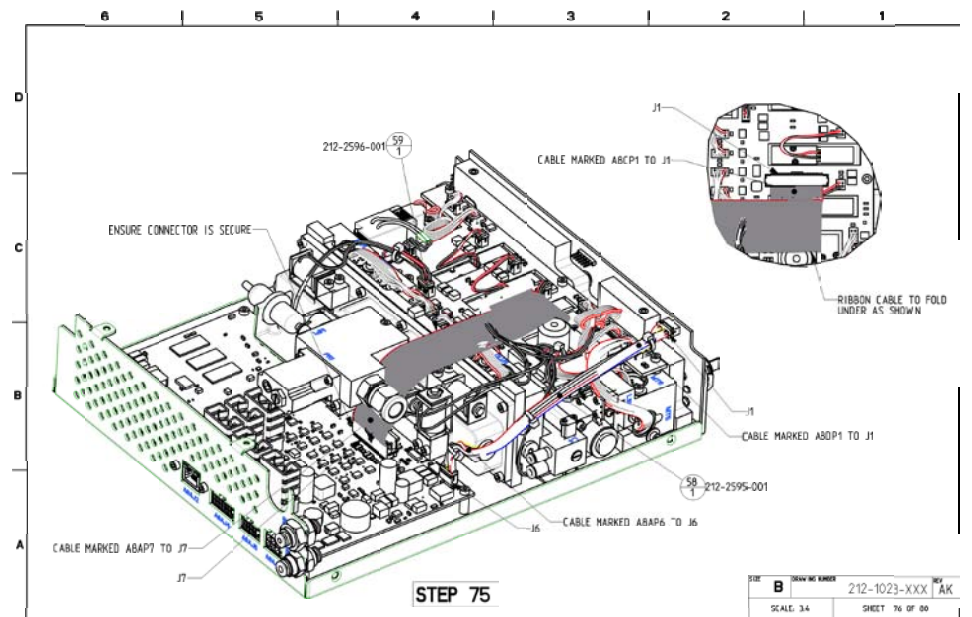
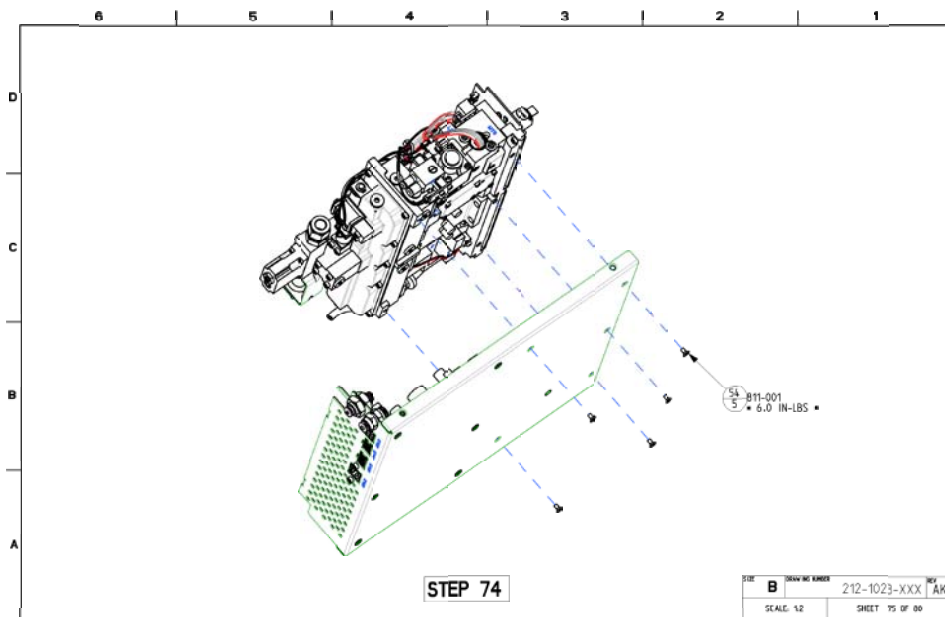
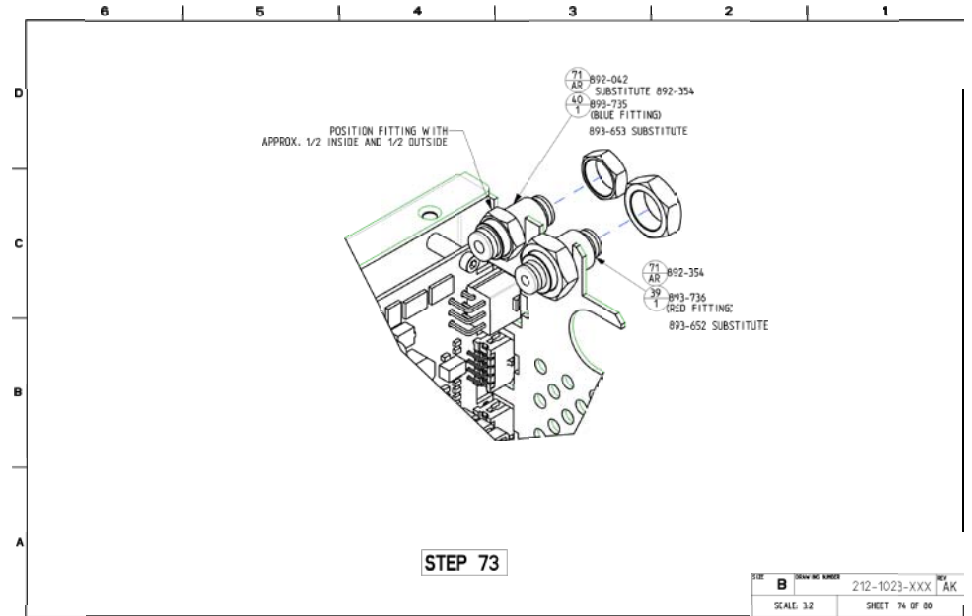
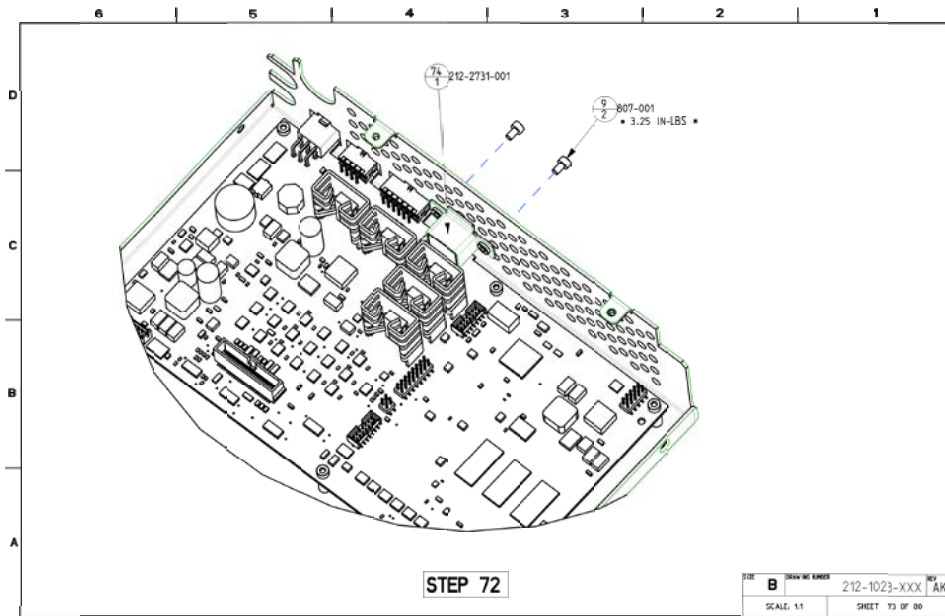


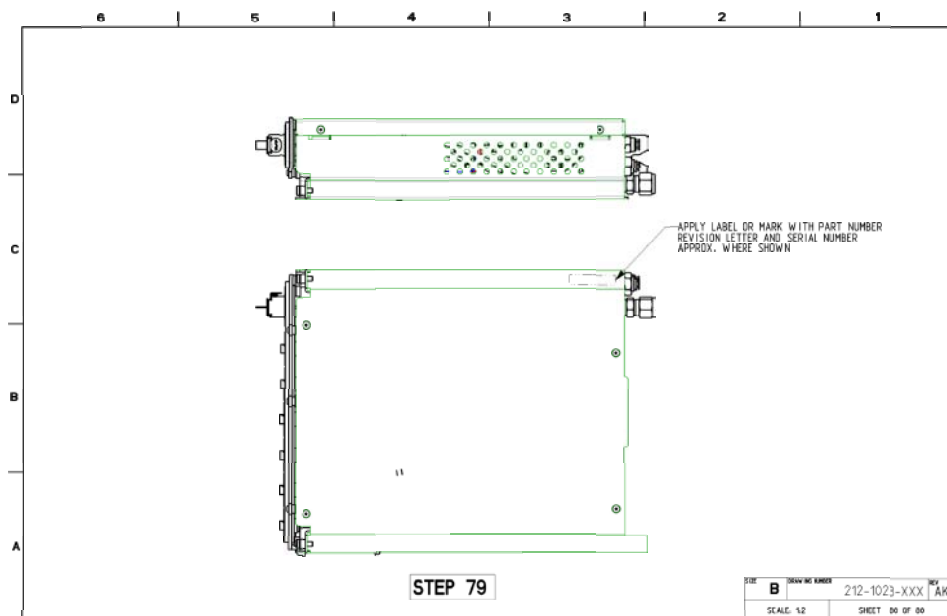
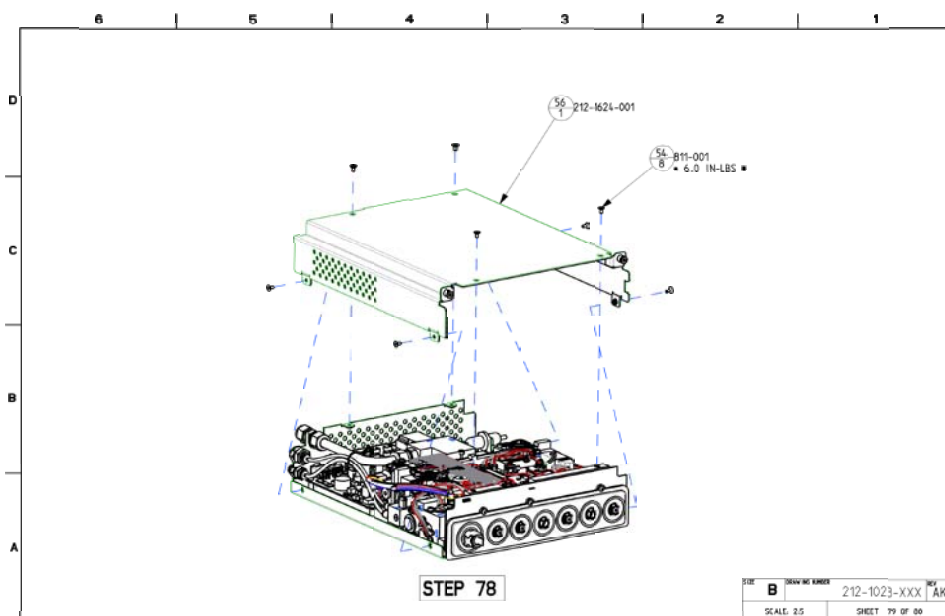
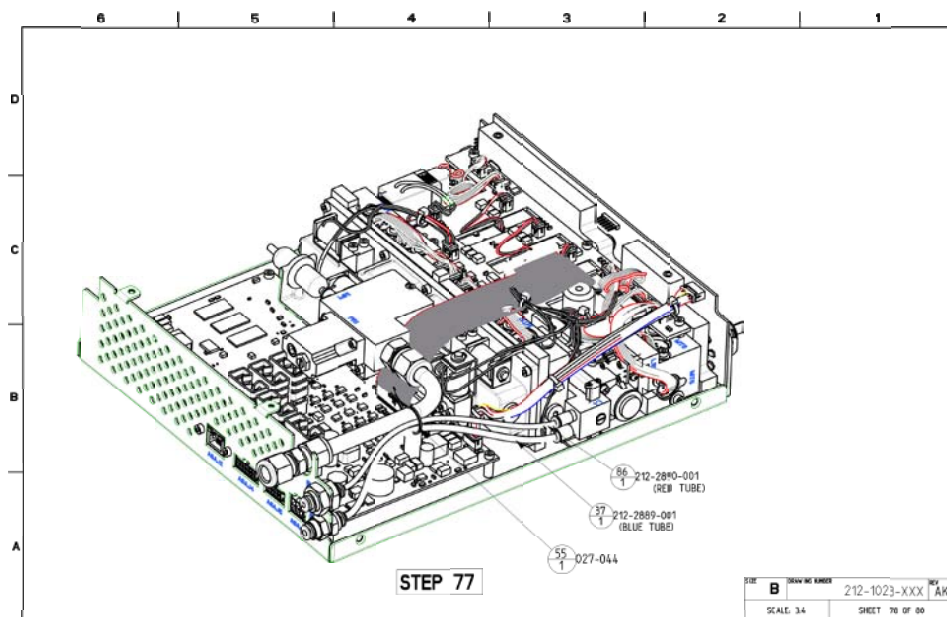
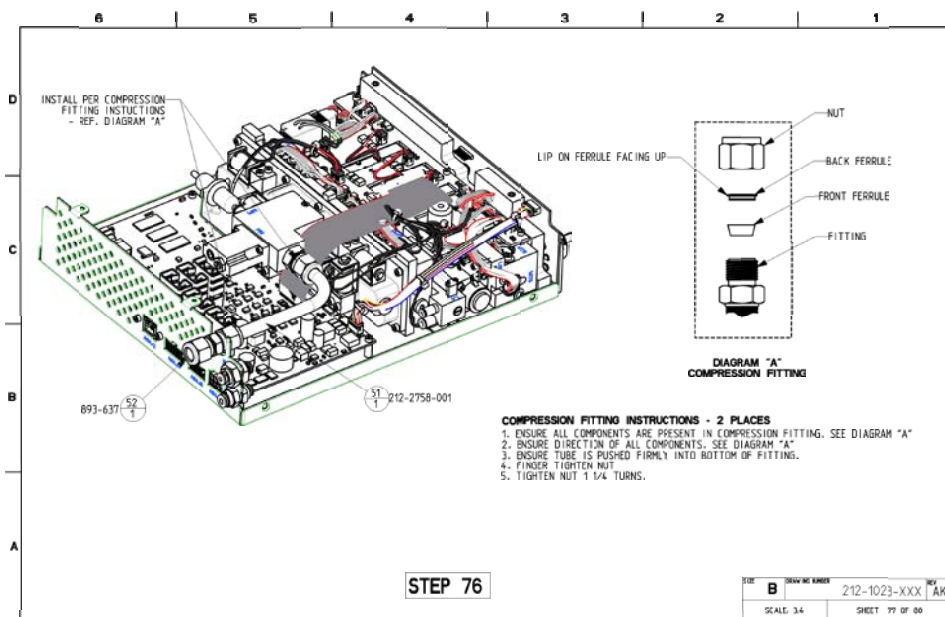












212-1037-501 ASSY, MODULE, U/S-DIAT AQUA

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1231-551	ASSY,PCB,U/S DIATHERMY	1
009	212-1378-001	HOUSING,MODULE,U/S	1
011	807-004	SCREW,CAP HD SKT,M3X10 SST	7
012	212-2858-003	FACEPLATE,US/DIATHERMY,PTD IEC	1
013	212-1855-551	ASSY,PCB,RING ILLUMINATION	1
014	807-147	SCREW,CAP HD SKT,M2.5X5 SST	6
015	212-2743-001	CONNECTOR,PLUG,PCB HP GOLD	1
016	774-191	O-RING,,739IDX.070W,BUNA-N	1
017	796-141	WASHER,FLAT,,216X1.000X.06 SST	1
018	797-008	WASHER,SPLT LK,,25X.49X.06 ZNC	1
019	826-131	SCREW,CAP HD SKT,,25-20X.437LK	1
020	212-2271-001	ASSY,CABLE,U/S W35	1
021	212-2271-002	ASSY,CABLE,U/S W40	1
022	063-022	JACK,BANANA,4MM GOLD PLATED	2
023	212-2273-001	CABLE ASSY,W42	1
024	212-2269-001	CABLE ASSY,U/S RING ILLUM,W31	1
025	212-2466-001	GASKET,EMI,U/S MODULE	1
026	807-002	SCREW,CAP HD SKT,M3X6 SST	4
027	212-1382-001	COVER,MODULE,U/S DIAT AQUA	1
028	811-001	SCREW,FLAT HD SKT,M3X6 SST	6
029	766-003	STANDOFF,HEX,6-32X.31 M/F NYL	1
030	769-072	NUT,HEX,6-32 NYLON	1
031	798-017	WASHER,FLAT,NO.6 .062 THK NYL	1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (N) ON TOP AND QUANTITY (Y) IN BOTTOM.
4. -SXXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -SXX SERIES P/N.
5. BUILD PER 992-2100-001 AND TEST PIR 907-2100-035.
6. SAFETY CRITICAL COMPONENT.

3D VIEW

TABULATION

PART NUMBER	PART NUMBER	REV.	DESCRIPTION
212-1037-501	212-1037-501S	L	ASSY,MODULE,U/S-DIAT AQUA

SEE SEPARATE PART LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	212-1037-501	ASSY,MODULE,U/S-DIAT AQUA		

REVISION HISTORY

REV	ECN	DATE
P42	NOT RELEASED	7/19/08
A	20060571	2/25/08
B	20082000	3/05/08
C	20082971	7/05/08
D	20090859	05/27/09
E	20091041	06/30/09
F	20091888	07/28/09
G	20100579	04/21/10
H	20101009	06/29/10
J	CN028797SECN	03/27/12
K	CN053335ECN	03/05/14
L	CN054757ECN	04/25/14

PEOPLE B. LEE DATE 05/19/05
K. SHELTON DATE 05/19/05
J. FOSTER DATE 02/09/08
2/23/2007

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Alcon
Fremont, California 94538

ASSY,MODULE,U/S-DIAT AQUA

B 212-1037-XXX L

SCALE: 1:20 SHEET 1 OF 14

VERSION: 1.1

STEP 1

ENSURE INSULATOR SHEET WAS ASSEMBLED BY SUPPLIER

212-1037-501

212-1231-551

766-003

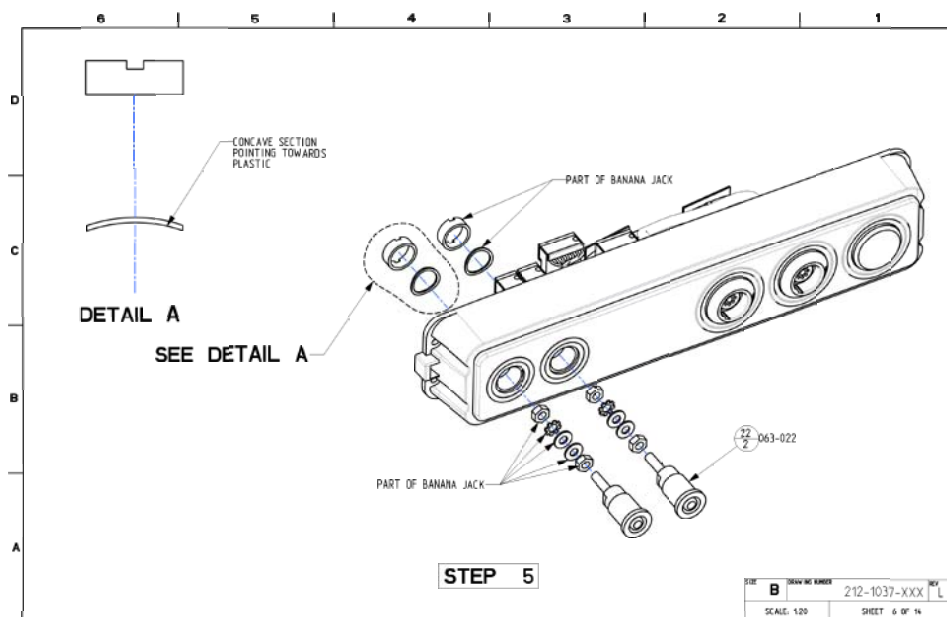
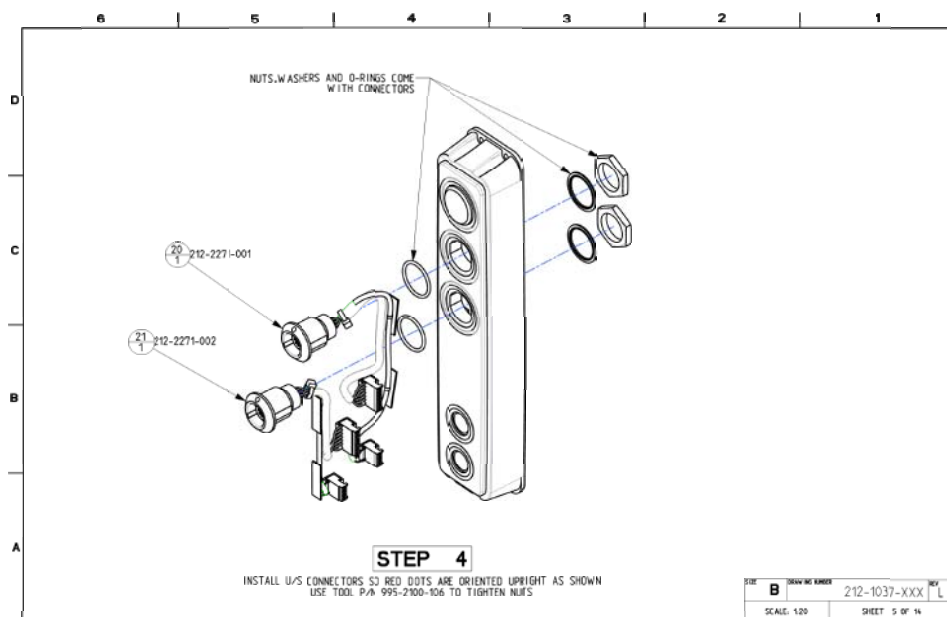
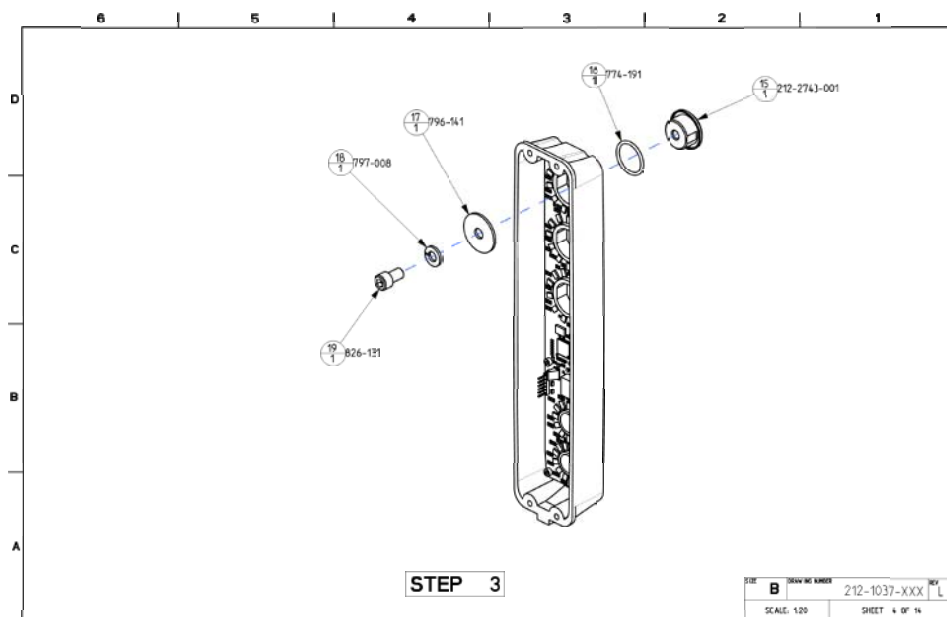
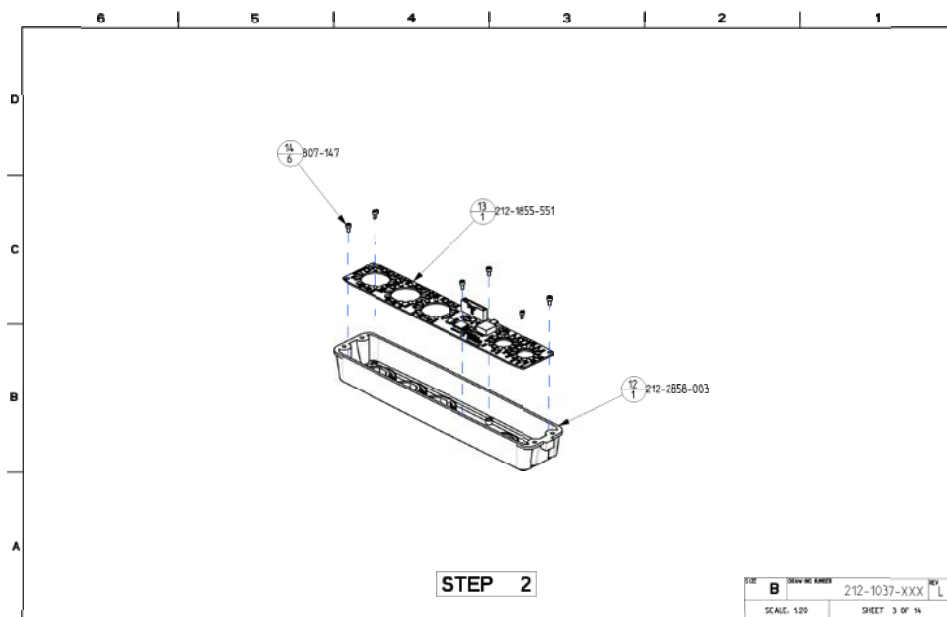
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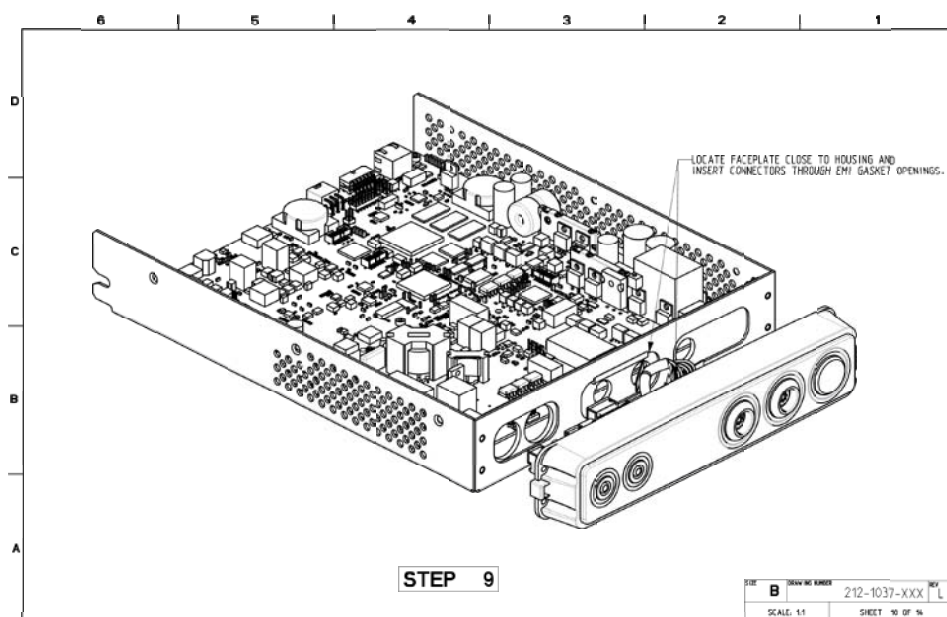
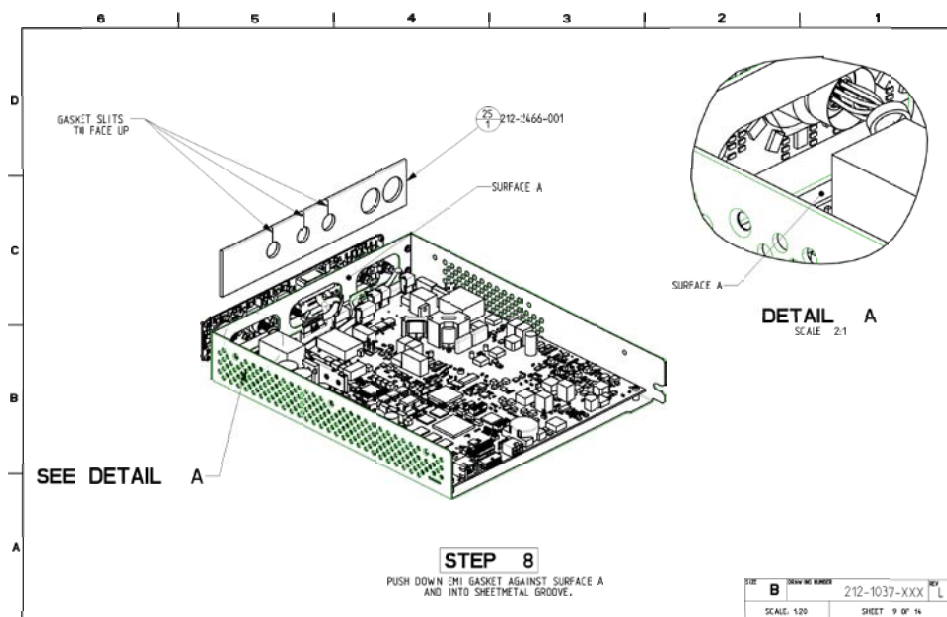
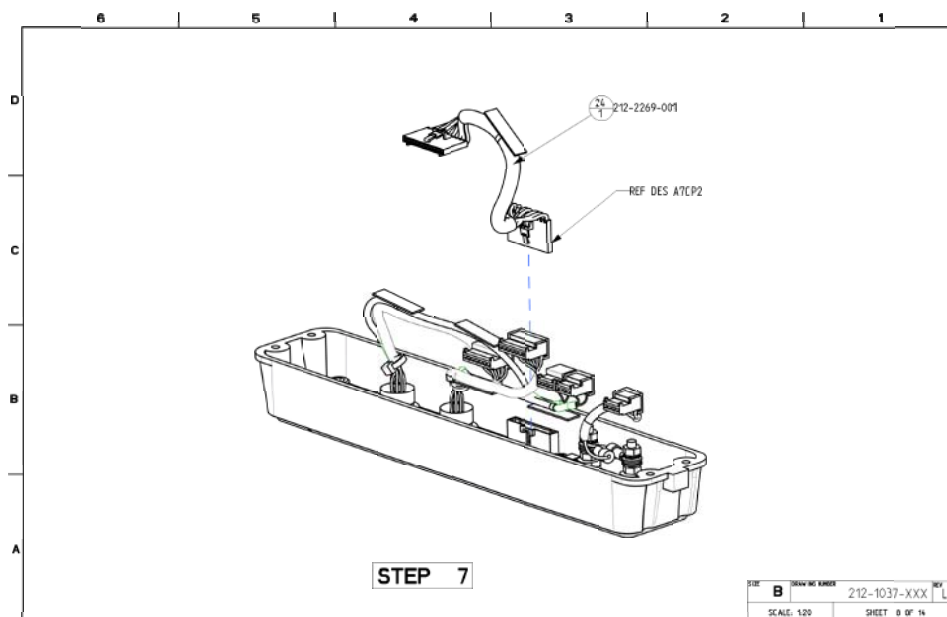
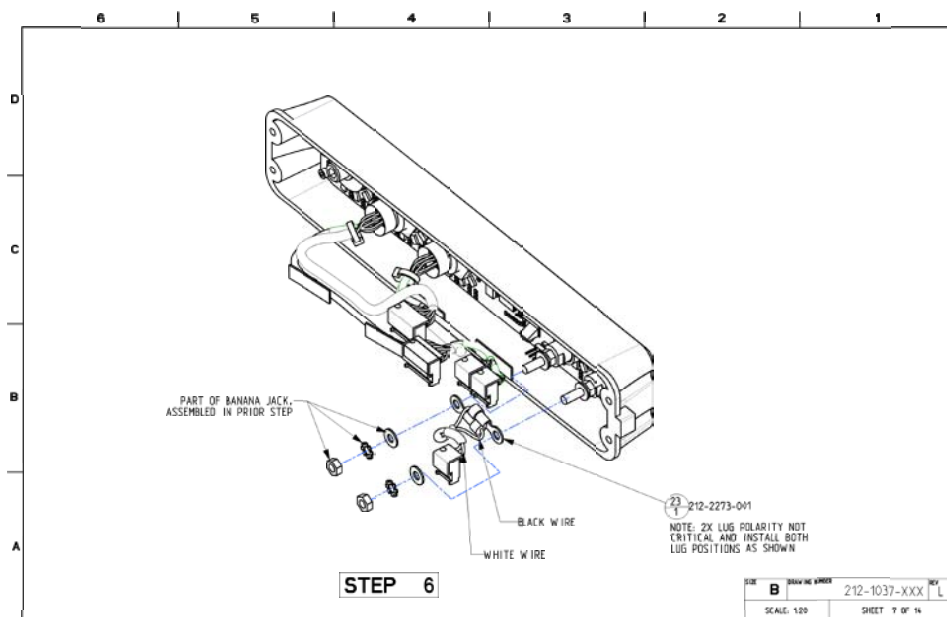
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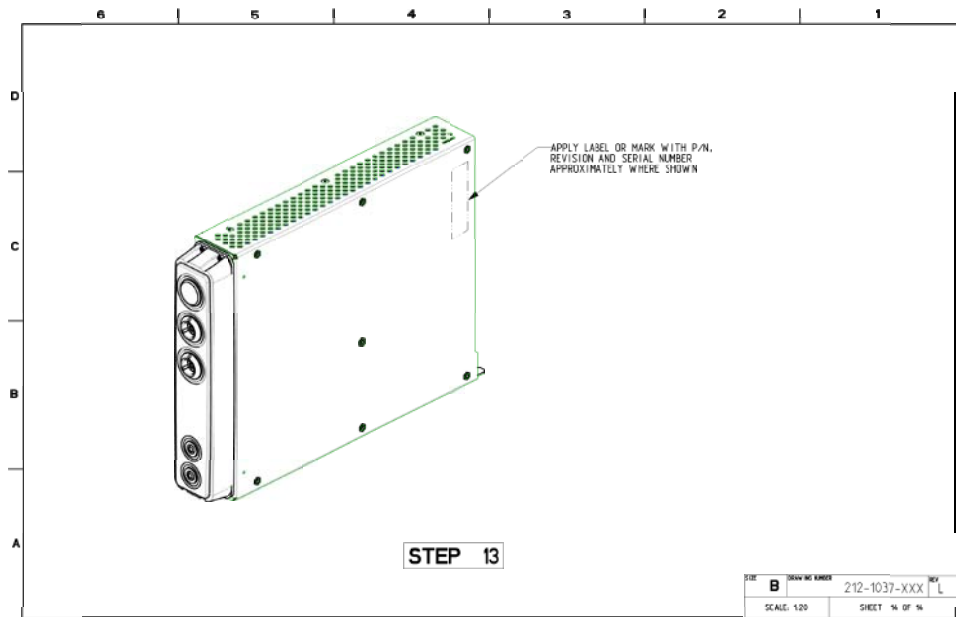
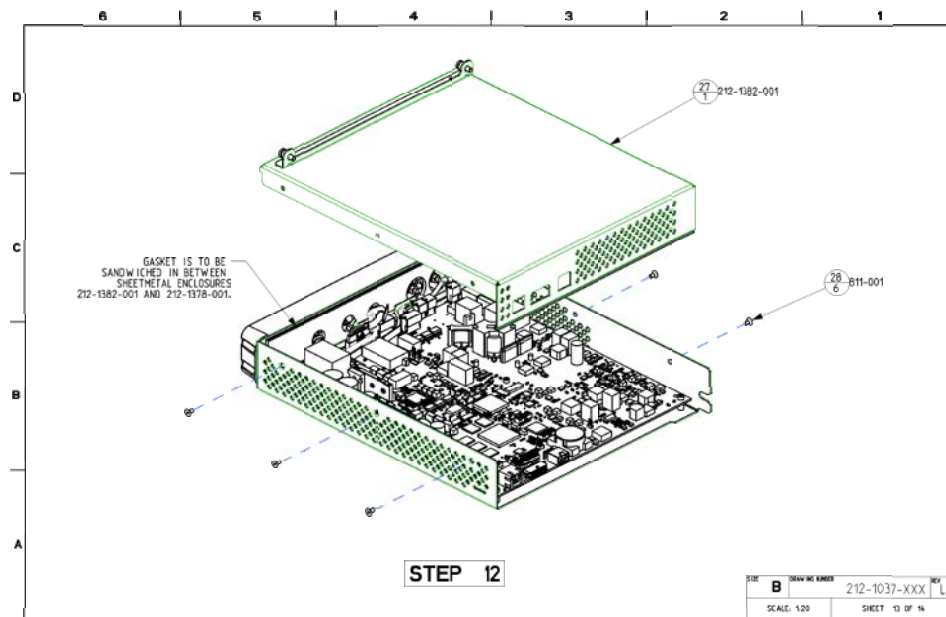
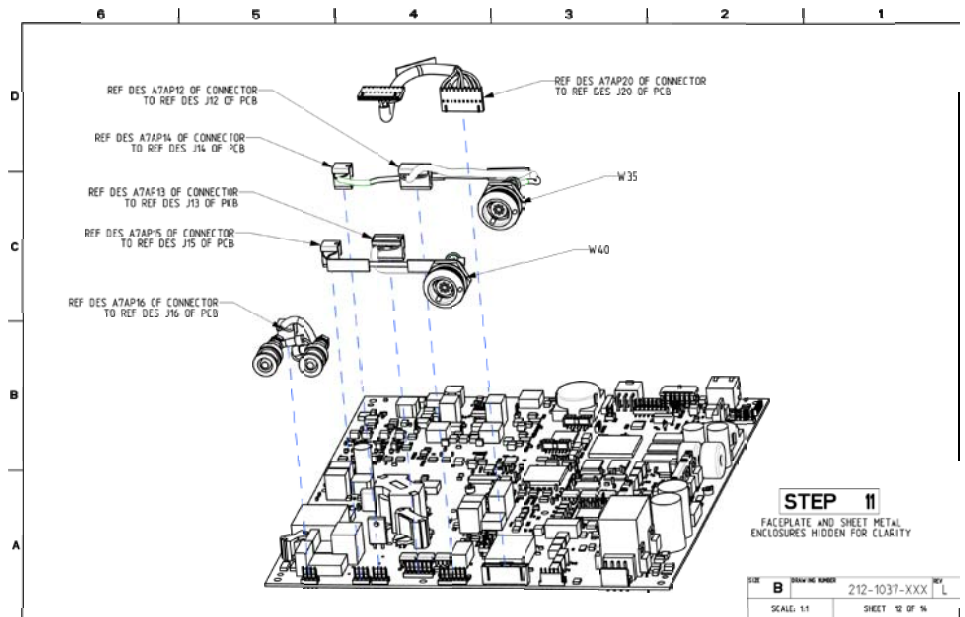
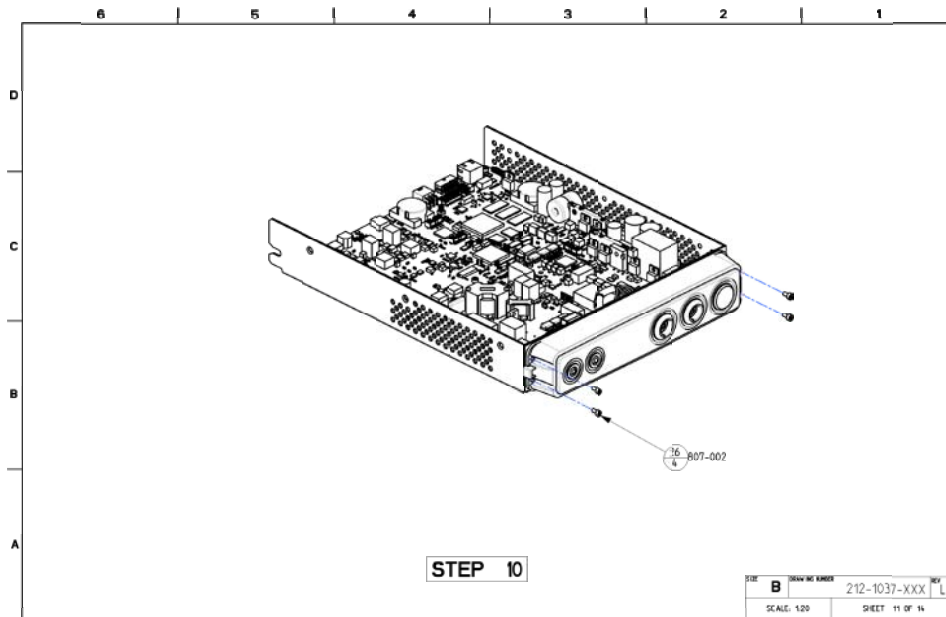
807-004

212-1378-001

SCALE: 1:20 SHEET 2 OF 14







212-3564-501 ASSY, Module, US/DIAT IOL

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-3615-001	HOUSING,U/S MODULE,IOL	1
002	212-3565-551	ASSY,PCB,US DIATH AUTOSERT IOL	1
003	807-004	SCREW,CAP HD SKT,M3X10 SST	7
004	212-3568-001	FACEPLATE,U/S DIATHERMY,IOL	1
005	212-1855-551	ASSY,PCB,RING ILLUMINATION	1
006	807-147	SCREW,CAP HD SKT,M2.5X5 SST	6
007	212-3567-001	ASSY,CABLE RECEPTACLE,IOL INJ	1
008	212-2271-001	ASSY,CABLE,U/S W35	1
009	212-2271-002	ASSY,CABLE,U/S W40	1
010	063-022	JACK,BANANA,4MM GOLD PLATED	2
011	212-2273-001	CABLE ASSY,W42	1
012	212-2269-001	CABLE ASSY,U/S RING ILLUM,W31	1
013	807-002	SCREW,CAP HD SKT,M3X6 SST	4
014	212-1382-001	COVER,MODULE,U/S DIAT AQUA	1
015	811-001	SCREW,FLAT HD SKT,M3X6 SST	6
016	027-003	CABLE TIE,,625X3.50L,NYLON	2
017	766-003	STANDOFF,HEX,6-32X.31 M/F NYL	1
018	769-072	NUT,HEX,6-32 NYLON	1
019	798-017	WASHER,FLAT,NO.6 .062 THK NYL	1
020	797-116	WASHER,LOCK,INT.79X.98X.05 BRZ	1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND AECON SPECIFICATION 701-026.
2. (X/Y) BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
3. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
4. -SXXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -SXX SERIES P/N. NO SEPARATE PARTS LISTS.
5. BUILD PER 992-2120-047 AND TEST PER 907-2120-103

APPLY LABEL OR MARK WITH P/N, REVISION AND SERIAL NUMBER APPROXIMATELY WHERE SHOWN

3D VIEW

REVISION HISTORY

REV	ECN	DATE
P3	NOT RELEASED	10/04/13
A	EN050122ECN	10/27/14

TABULATION BLOCK

PART NUMBER	REV	DESCRIPTION	PART NUMBER	DESCRIPTION
212-3564-501	A	ASSY,MODULE,US/DIAT IOL	212-3564-501S	ASSY,MODULE,US/DIAT IOL FS

SEE SEPARATE PARTS LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MAUFACTURER	ITEM
BY	K.BARR	DATE	01/22/13	
DESIGNED	K.LORD	DATE	01/22/13	
APPROVED	R.VAN	DATE	01/22/13	
FORMED	2/23/2007			

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AECON
Irvine, California 92618

DESCRIPTION: ASSY,MODULE,US/DIAT IOL

ITEM: B DRAWING NUMBER: 212-3564-XXX REV: A

SCALE: 1:2 SHEET 1 OF 10

POMEINK MODEL ATTRIBUTES NAME: 212-3564-501.PROC VERSION: 1.0

STEP 1

807-004 3/7

769-072 1/1

798-017 1/1

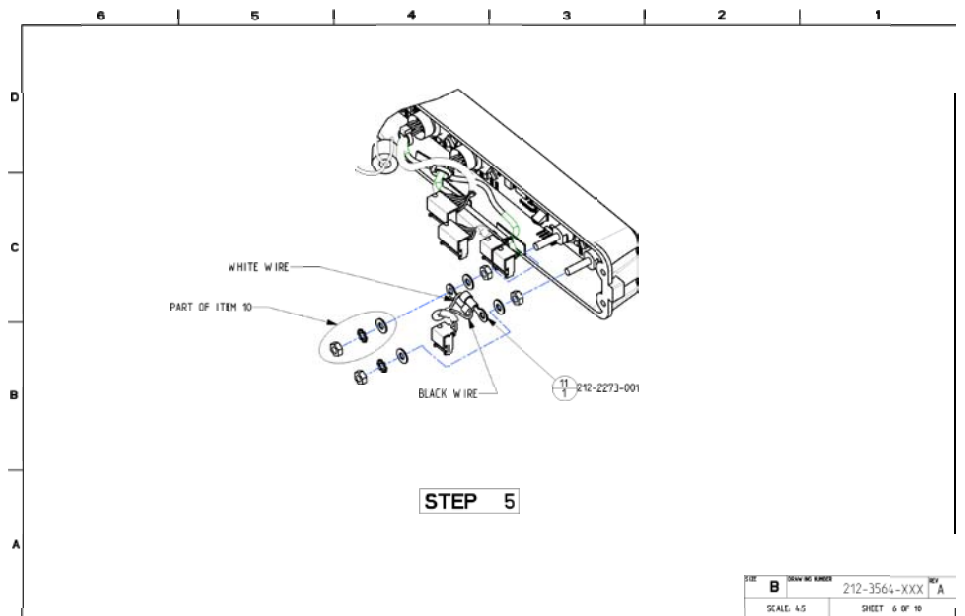
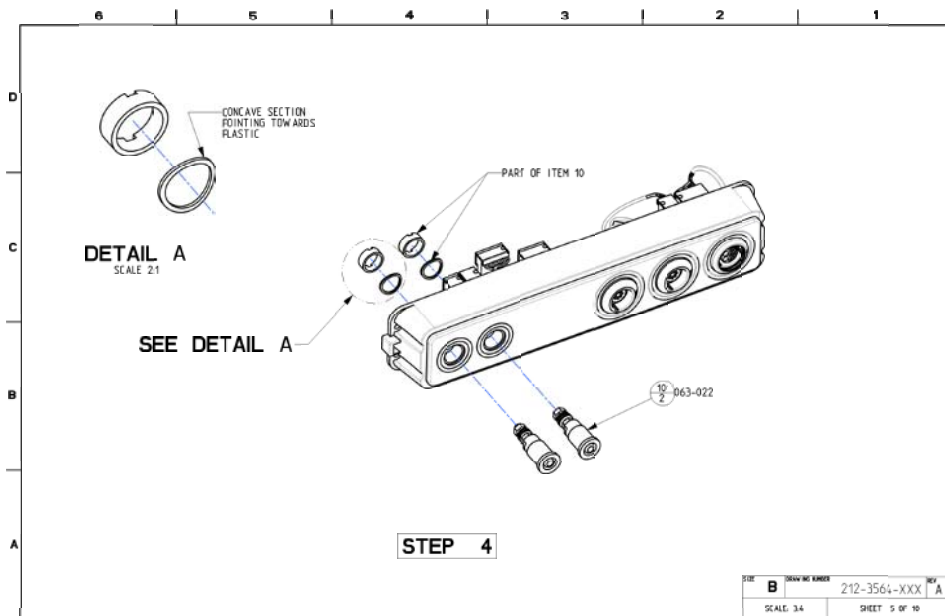
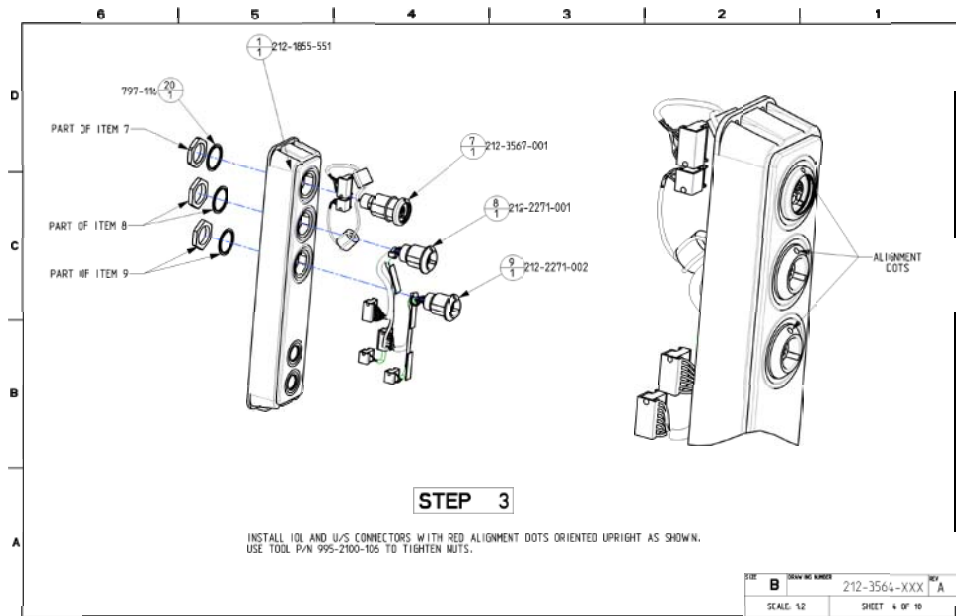
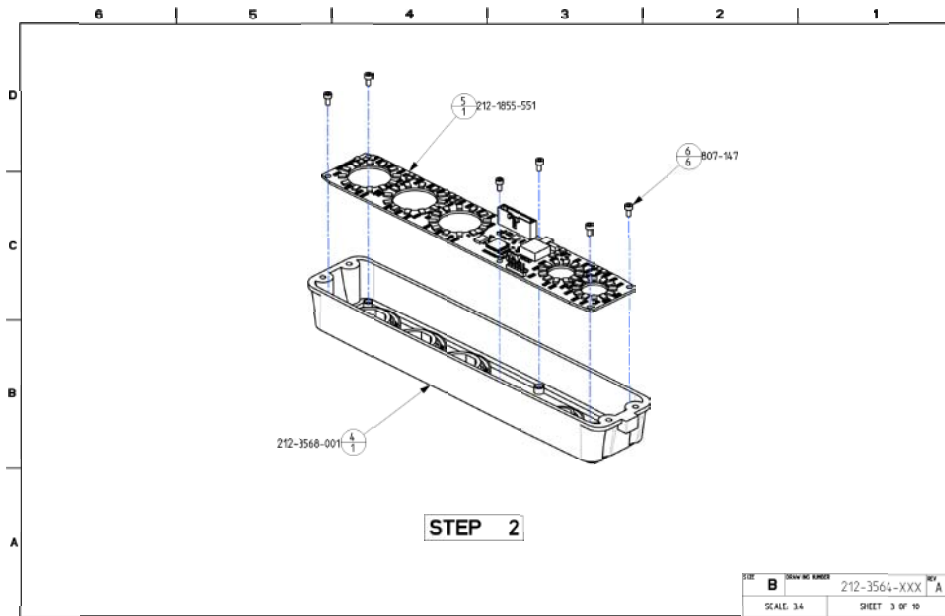
766-003 1/1

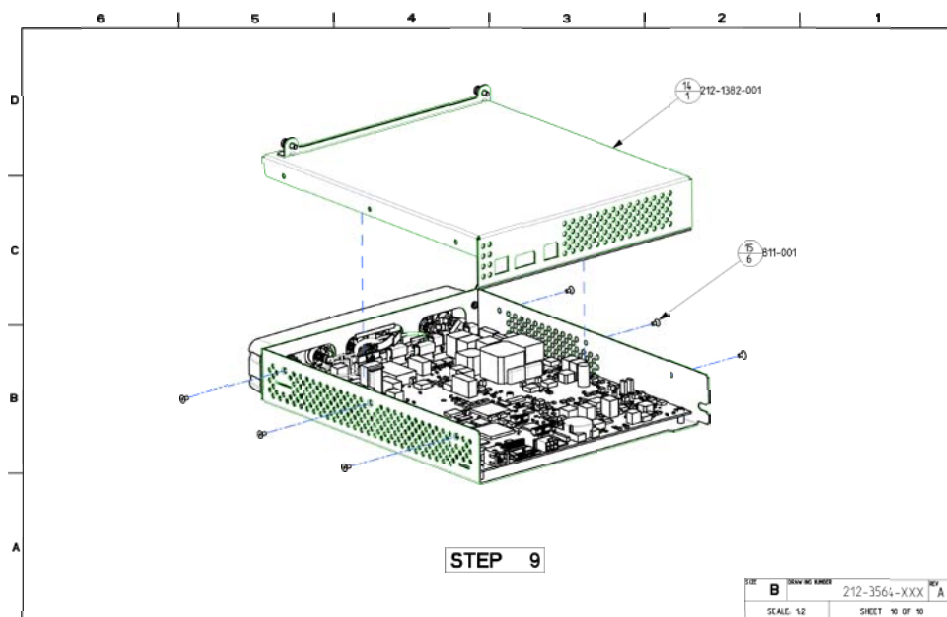
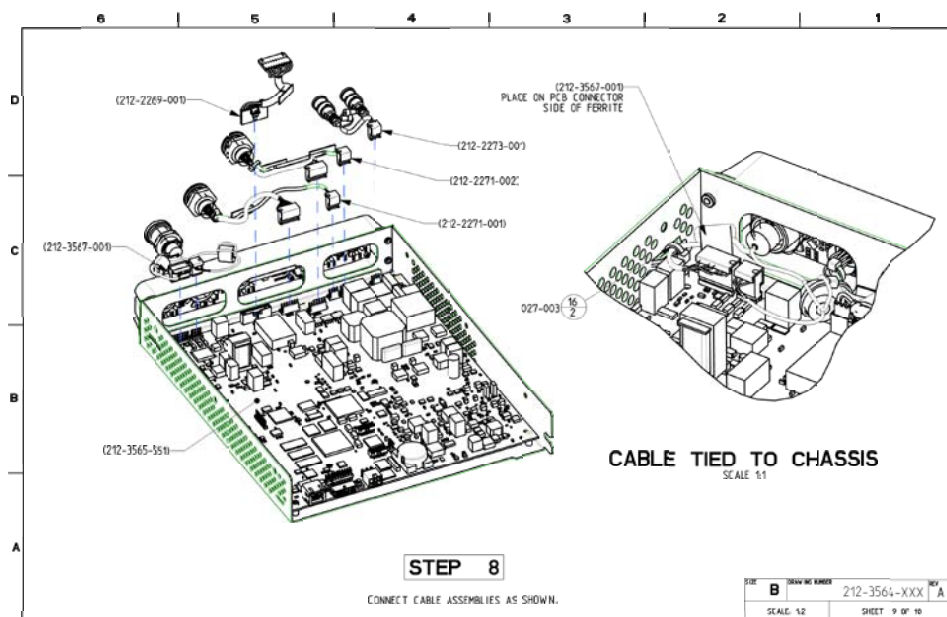
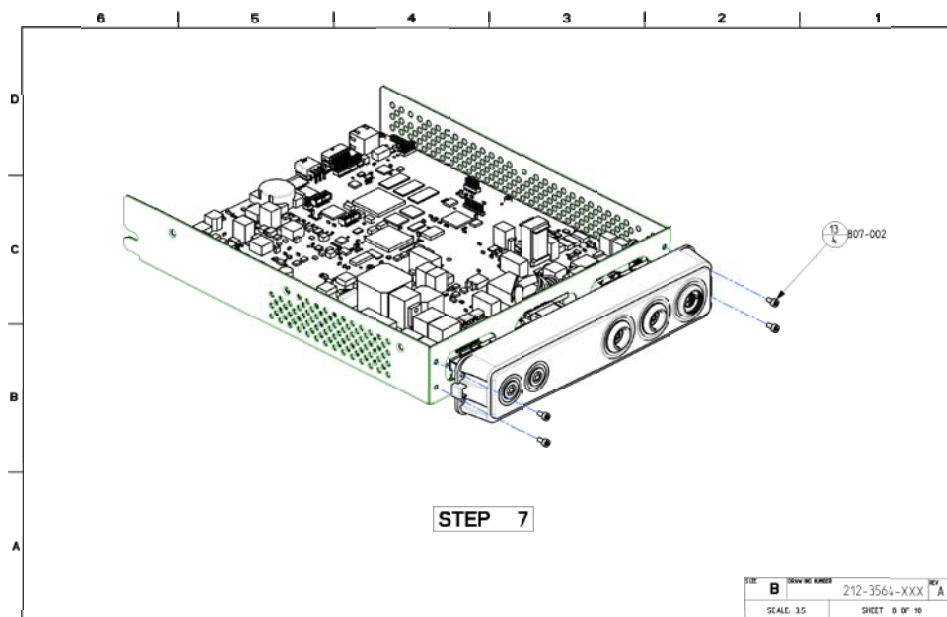
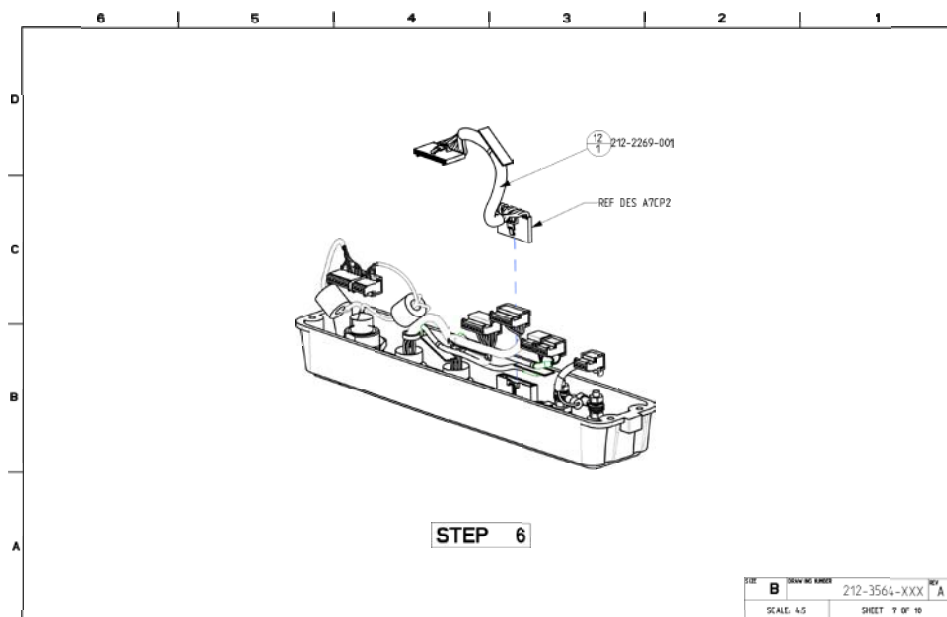
212-3615-001 1/1

STEP 1

ITEM: B DRAWING NUMBER: 212-3564-XXX REV: A

SCALE: 2:5 SHEET 2 OF 10






212-1040-501 ASSY, FILTER, OIL/AIR DRYER

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	893-703	FITTING,PLUG,QC .25 NPT MALE	1
002	212-2711-551	ASSY,PCB,AIR DISTRIBUTION	1
003	212-2798-001	MANIFOLD,EXT,GAS/AIR/CONN	1
004	212-1948-001	CLAMP,FILTER	1
005	212-1950-001	PLATE,ADAPTOR	2
006	212-1993-001	FRAME,FILTER,RIGHT	1
007	212-2816-001	FRAME,FILTER,LEFT	1
008	212-1995-001	FRAME,FILTER,REAR	1
009	212-2015-001	DUCT,AIR,INCOMING	1
010	212-2034-001	TUBING,PNEUMATIC AIR,.375OD	1
011	212-2035-001	TUBING,FLUIDIC AIR,.375OD	1
012	212-2226-001	HANDEL,FILTER	1
015	655-050	PLUG,SOCKET,7/16-20X3/16 HEX	3
016	699-021	FILTER,AIR,SERIES AF20	1
017	774-194	O-RING,SEAL SPACER	2
018	774-183	O-RING,.364IDX.070W,BUNA 70	3
019	788-097	SPACER,48MMX35.5MMX3MM,W/ ORING	2
020	798-336	WASHER,FLAT,.125X.375X.030 SST	6
021	807-001	SCREW,CAP HD SKT,M3X5 SST	6
023	807-003	SCREW,CAP HD SKT,M3X8 SST	10
024	807-004	SCREW,CAP HD SKT,M3X10 SST	6

ITEM #	PART NUMBER	DESCRIPTION	QTY
026	807-013	SCREW,CAP HD SKT,M4X8 SST	4
027	886-016	VALVE,RELIEF,.125 MNPT 150 PSI	1
028	212-2593-001	CABLE ASSY,SMC VALVE,W135	1
029	893-636	FITTING,COMPRESS,3/8X9/16-18	2
030	212-2730-001	CONNECTOR,COAXIAL,CPC	1
031	212-2588-001	CABLE ASSY,PRESS SNSR 300	1
033	212-2541-001	BRACKET,FRONT,AIR DIST	1
034	646-023	SLEEVE,CAP,.406 DIA X 1.00	1
035	212-2872-001	TUBING,1/8X1/16,RED 85A 1.1FT	1
036	212-2873-001	TUBING,5/32X1/16,BLU 85A 1.1FT	1
037	893-734	FITTING,M6X4MM,TUBE HEX HEAD	1
038	893-733	FITTING,10-32X.125,TUBE HEX HD	1
039	892-368	ADHESIVE,PERMABOND,LH150	AR
041	212-2797-001	MANIFOLD,GAS DISTRIBUTION	1
042	893-643	FITTING,ELBOW,.38 TUBE RTANG	1
043	026-143	CLAMP,CABLE .31X.38,BLK NYL	1
045	212-2729-001	CONNECTOR,FLANGED,LOCKED	1
046	655-048	PLUG,10-32 THD,BRASS	3
047	807-008	SCREW,CAP HD SKT,M3X25 SST	4
048	892-370	ADHESIVE,VIBRA-TITE,RED	AR
AR = As Required			

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCN SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3.  BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. • XX IN-LBS • INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE $\pm 10\%$ OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
5. -SXXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -SXX SERIES P/N.
6. BUILD PER MAP 992-2120-001 AND TEST PER 907-2120-075
7. DUST PLUG TO BE USED WHEN PORT IS NOT IN USE.

REVISION HISTORY

REV	ECN	DATE
F	20090553	04/13/09
G	20092411	01/13/10
H	20100929	06/15/10
J	CN038091ECN	12/05/12
K	CN046470ECN	08/13/13
L	CN050595ECN	01/24/14
M	CN054251ECN	04/09/14
N	CN056779ECN	08/04/14

TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-1040-501	ASSY.FILTER.OIL/AIR DRYER	212-1040-501S	N	ASSY.FILTER.OIL/AIR DRYER SVC

SEE SEPARATE PARTS LIST

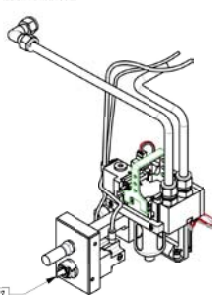
BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	212-1040-501	ASSY.FILTER.OIL/AIR DRYER		

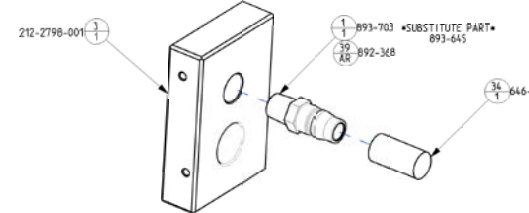
DATE: 06/24/06
BY: B. LEE
CHECKED: K. SHELTON
APPROVED: D. TURNER
DATE: 06/24/06
FORM: 2/23/2007
POMLINK MODEL ATTRIBUTES: NAME: 212-1040-501.PROC
VERSION: 4.7

Alcon
VISTA, CALIFORNIA, U.S.A.

DESCRIPTION: ASSY.FILTER.OIL/AIR DRYER
SCALE: 2:5
SHEET 1 OF 30



STEP 1



212-2798-001

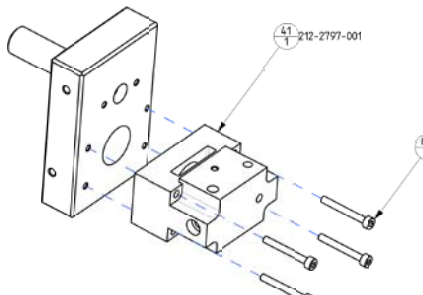
893-703 • SUBSTITUTE PART •
893-645

892-368

646-023

SCALE: 1:1
SHEET 2 OF 30

STEP 2



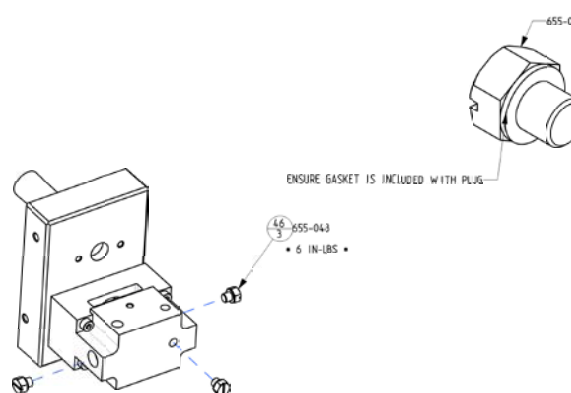
212-2797-001

892-368

646-023

SCALE: 1:1
SHEET 3 OF 30

STEP 3

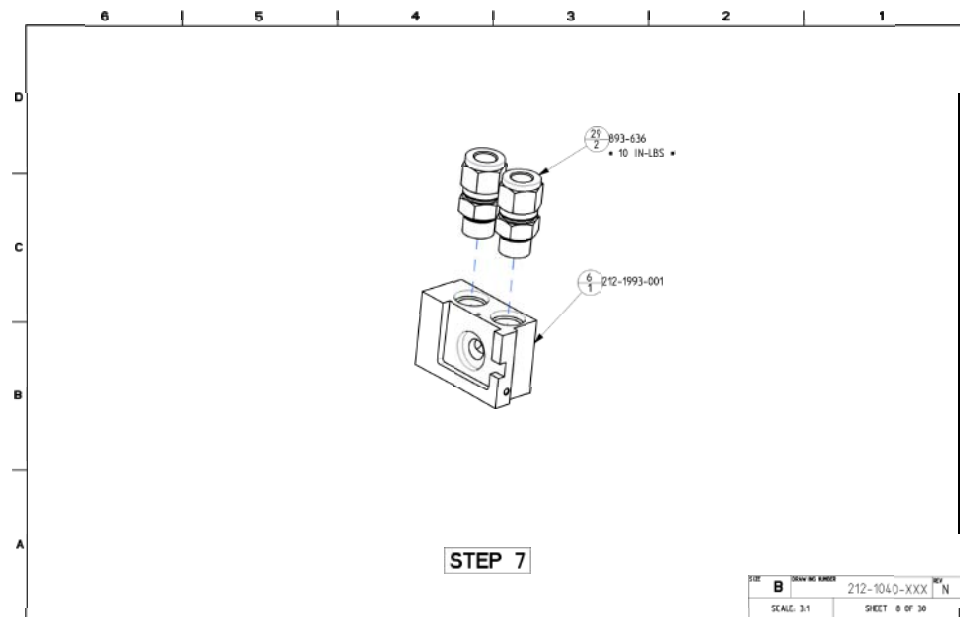
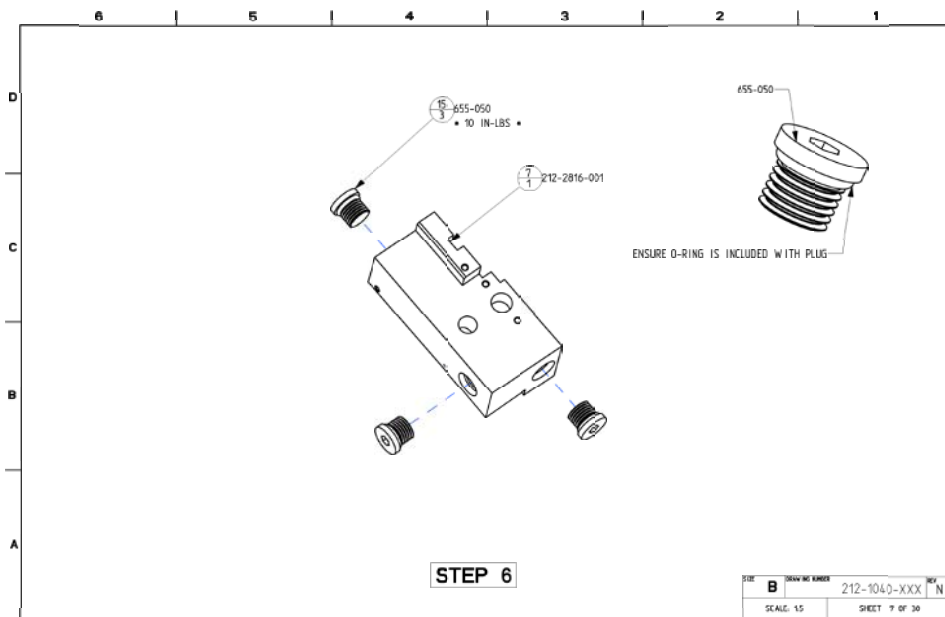
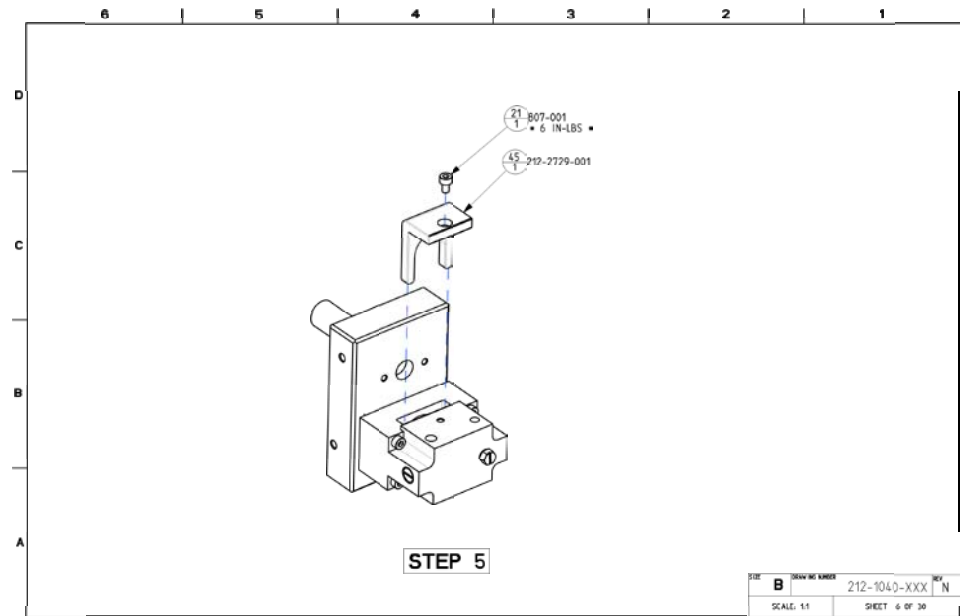
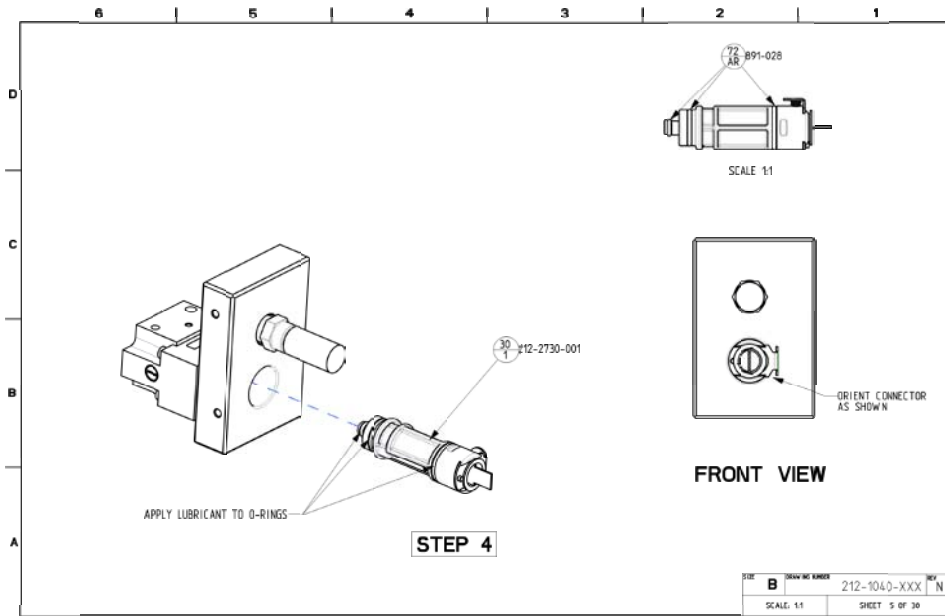


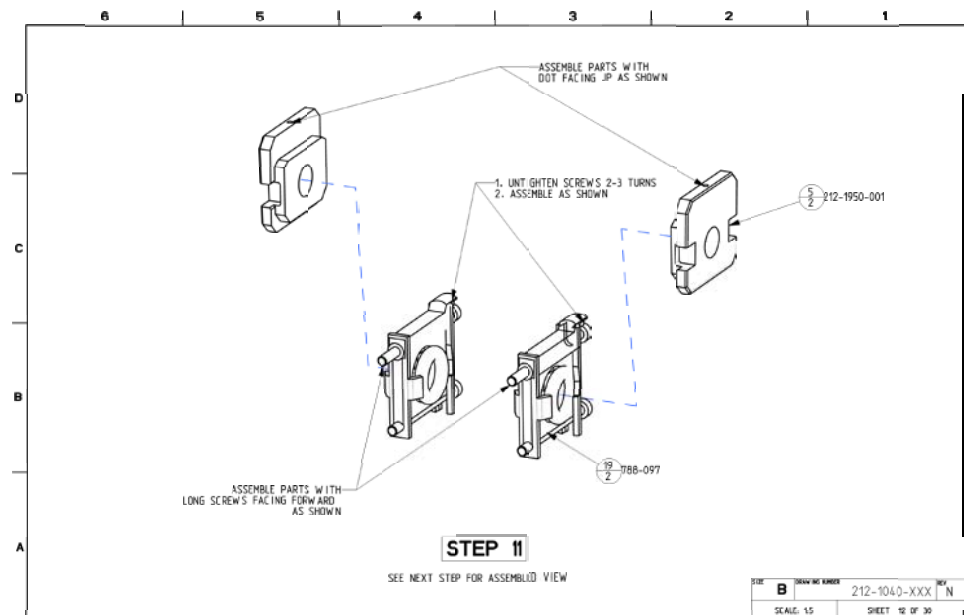
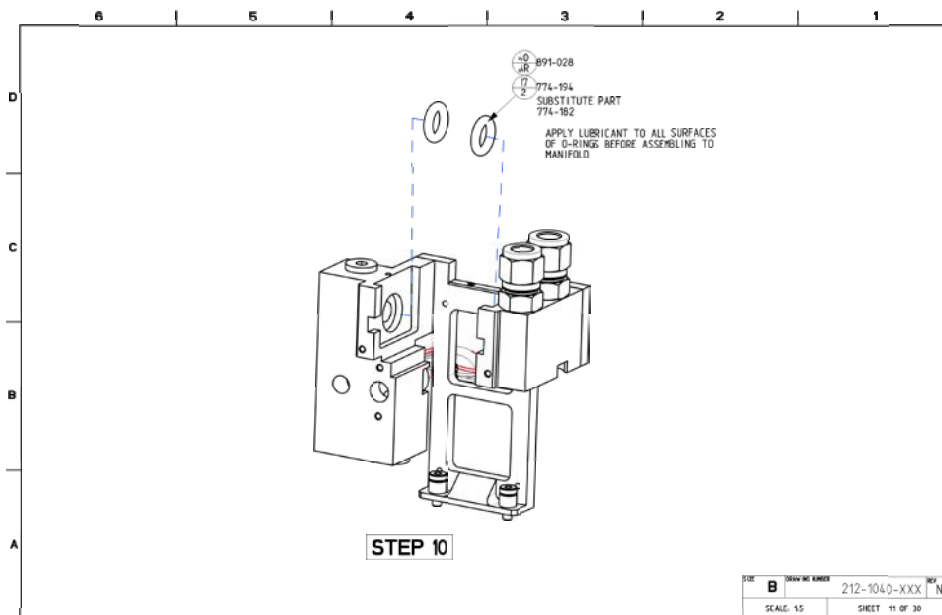
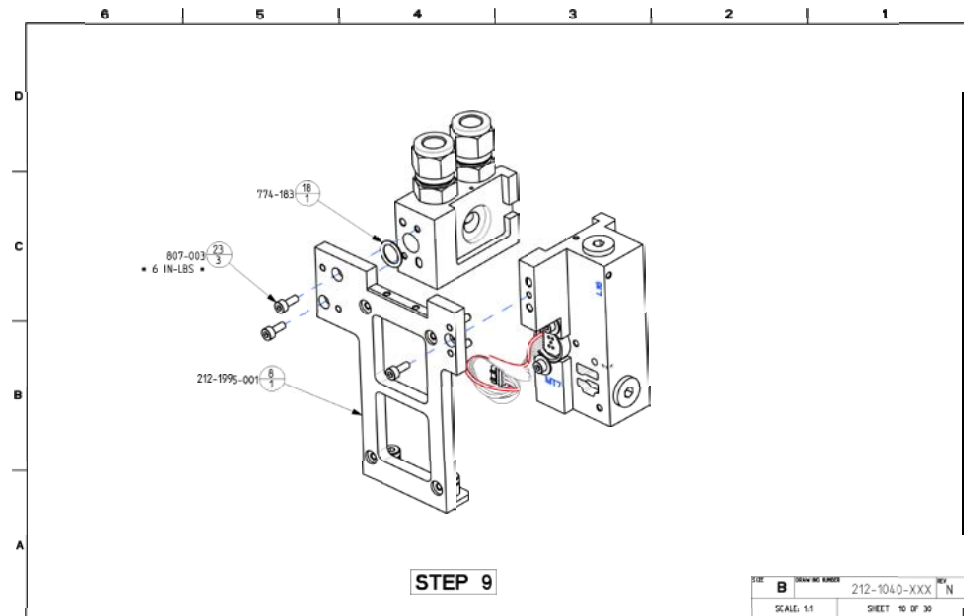
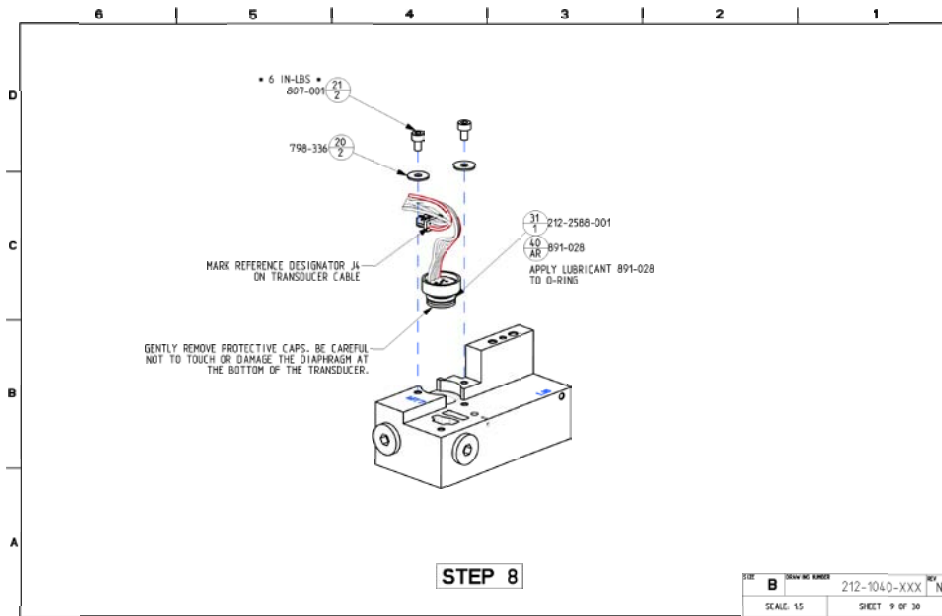
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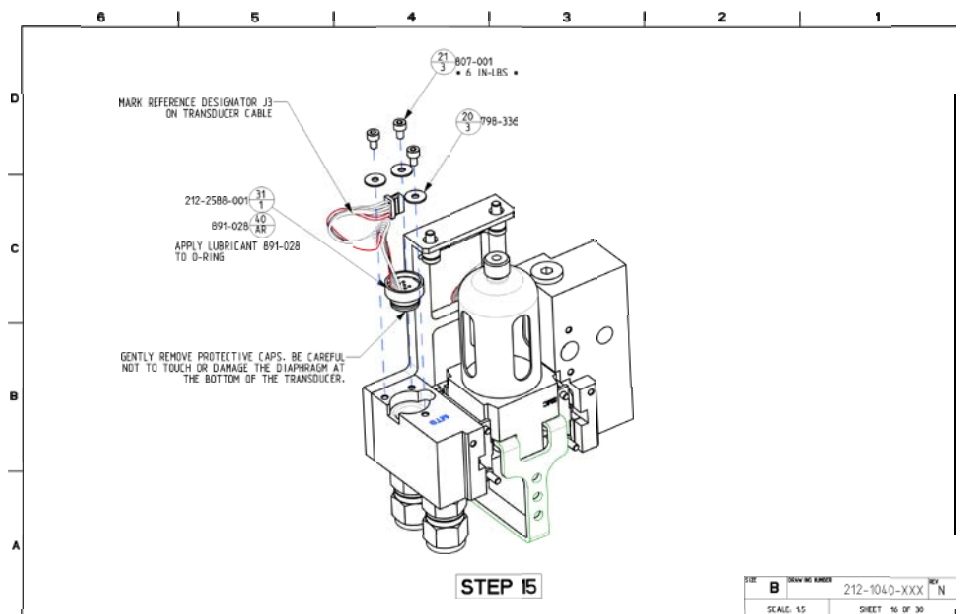
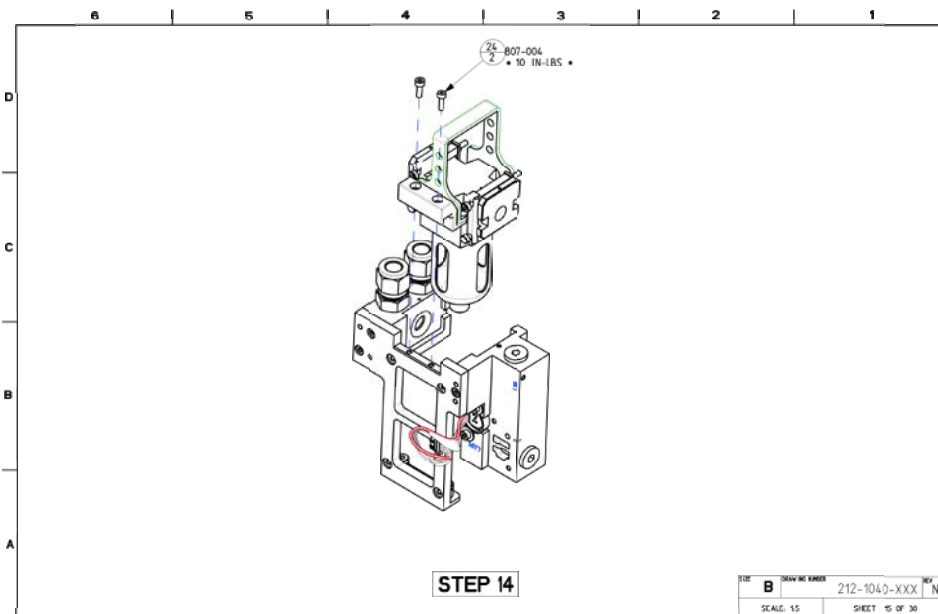
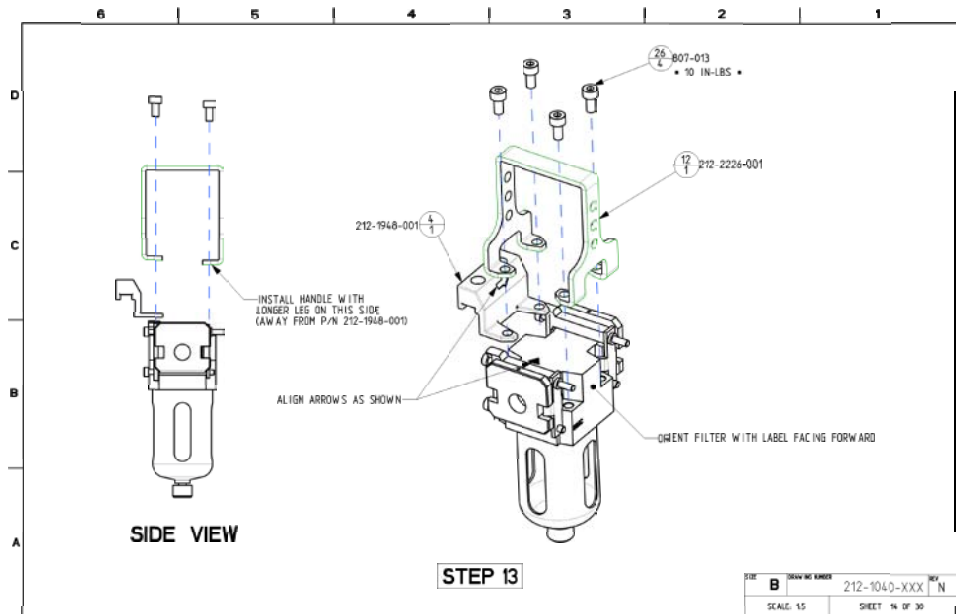
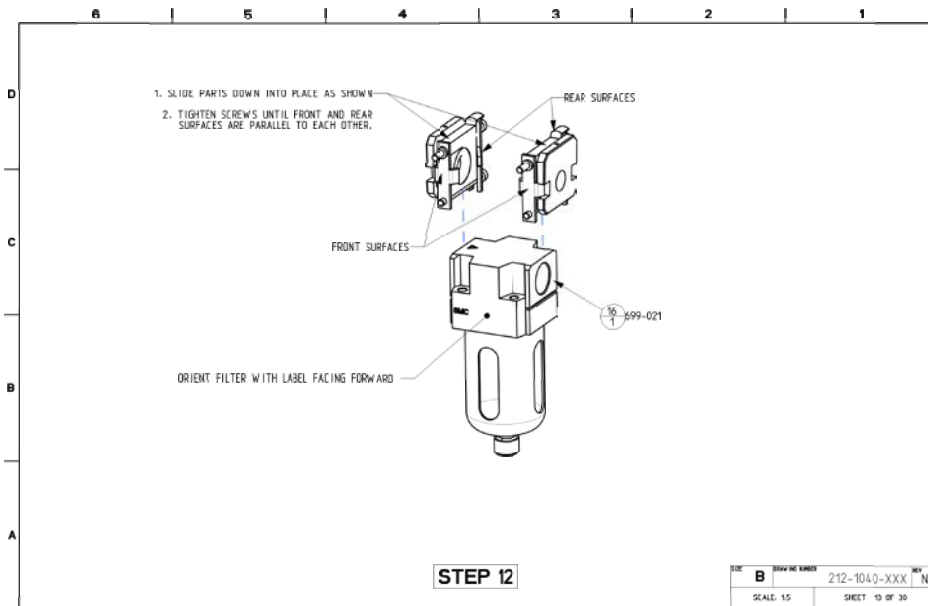
ENSURE GASKET IS INCLUDED WITH PLUG

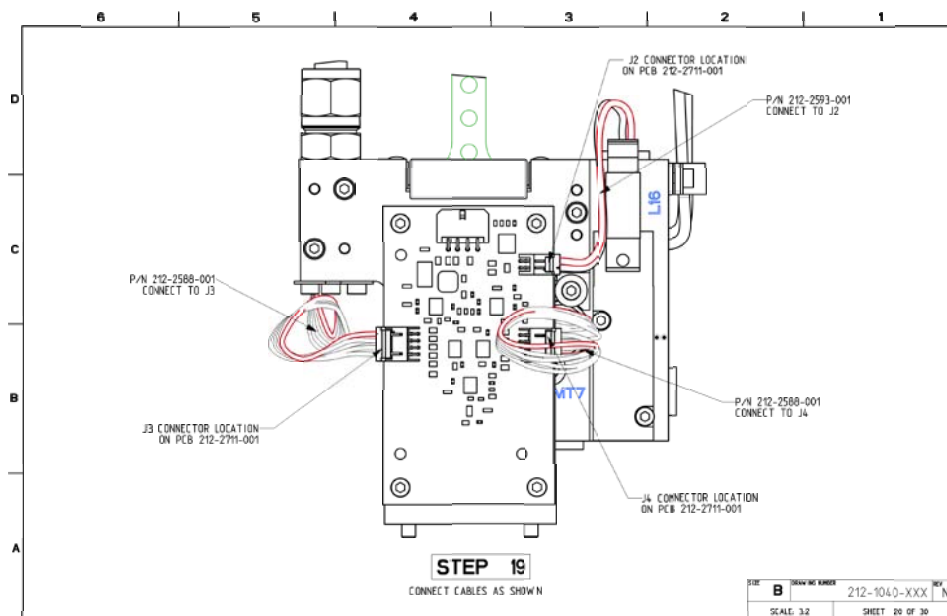
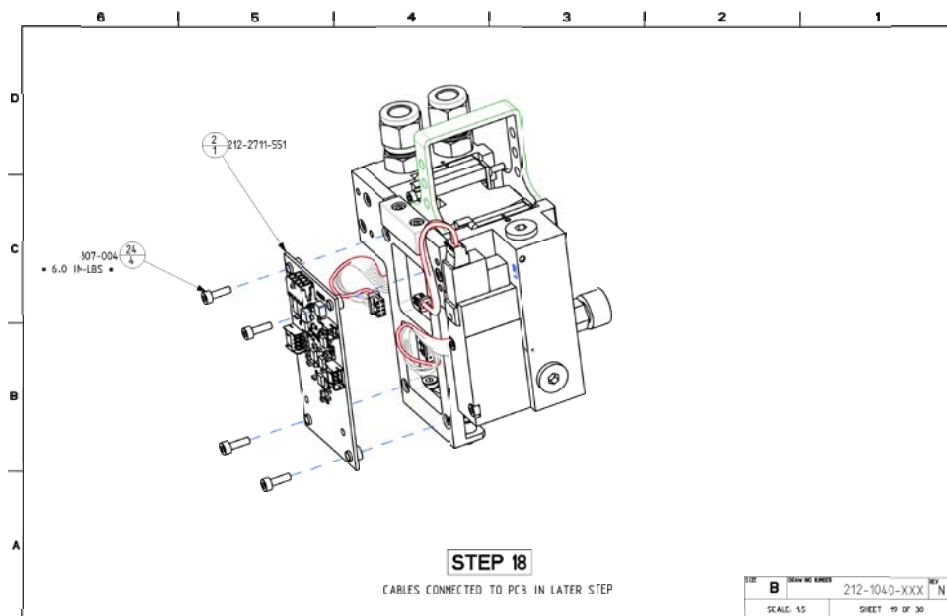
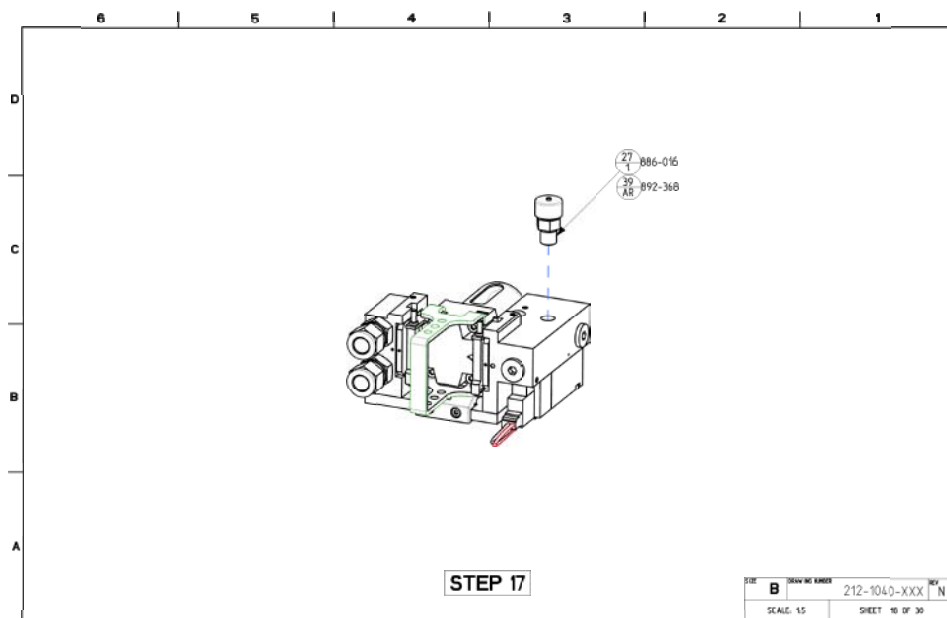
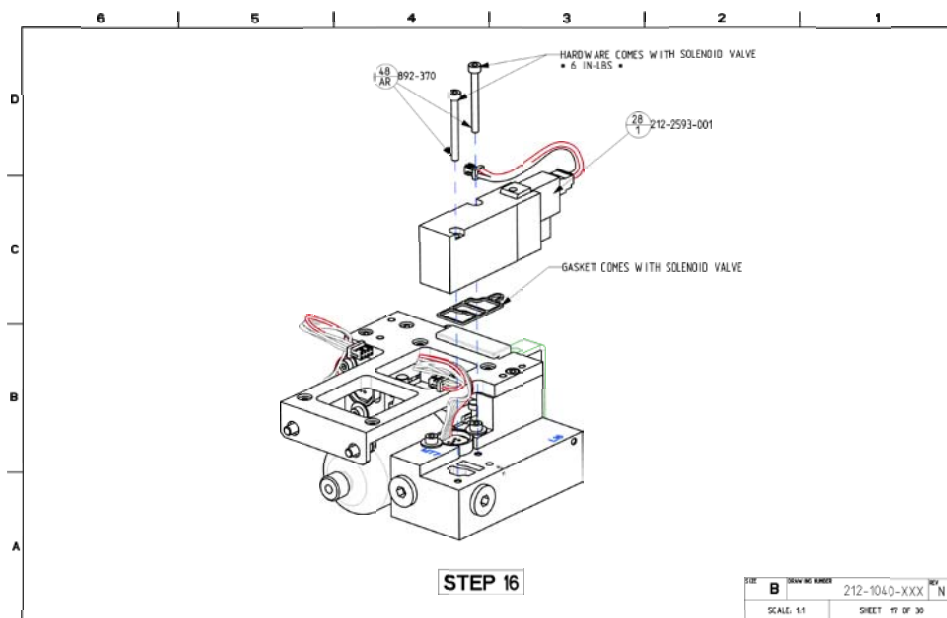
655-043
• 6 IN-LBS •

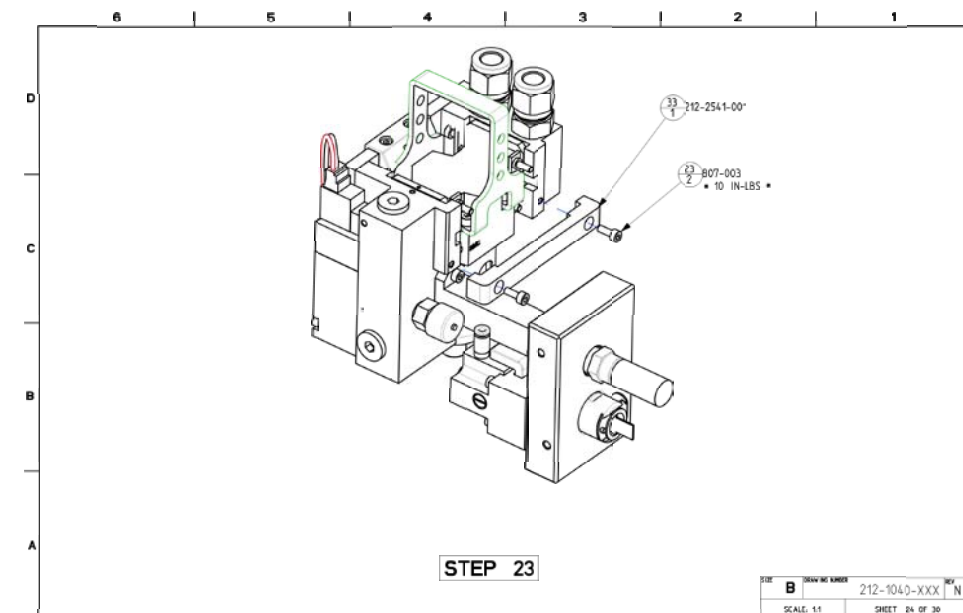
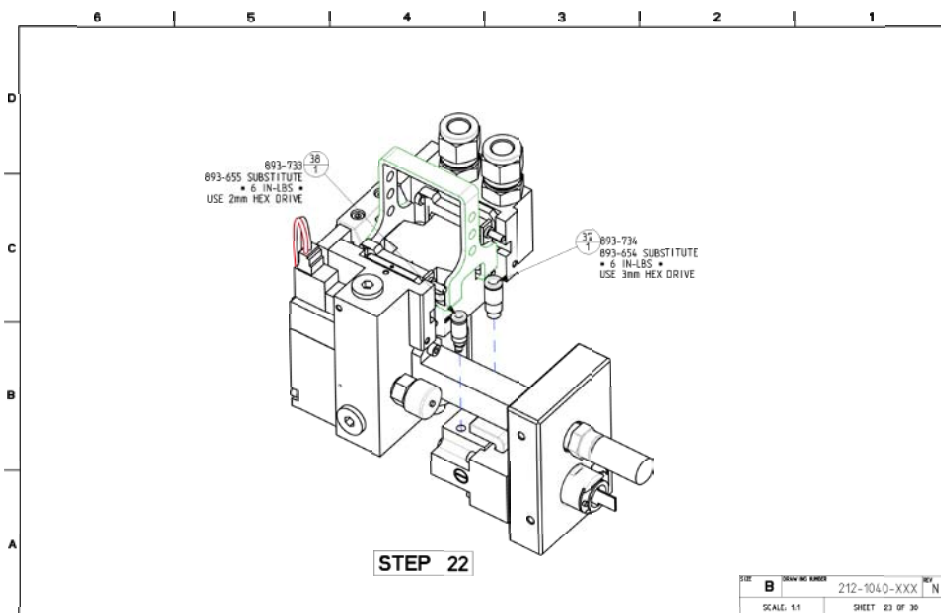
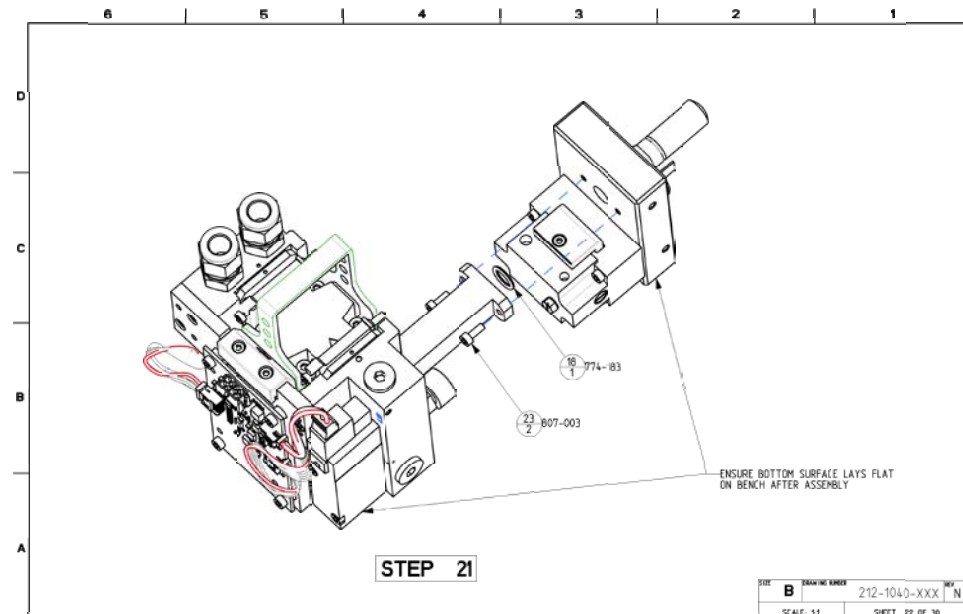
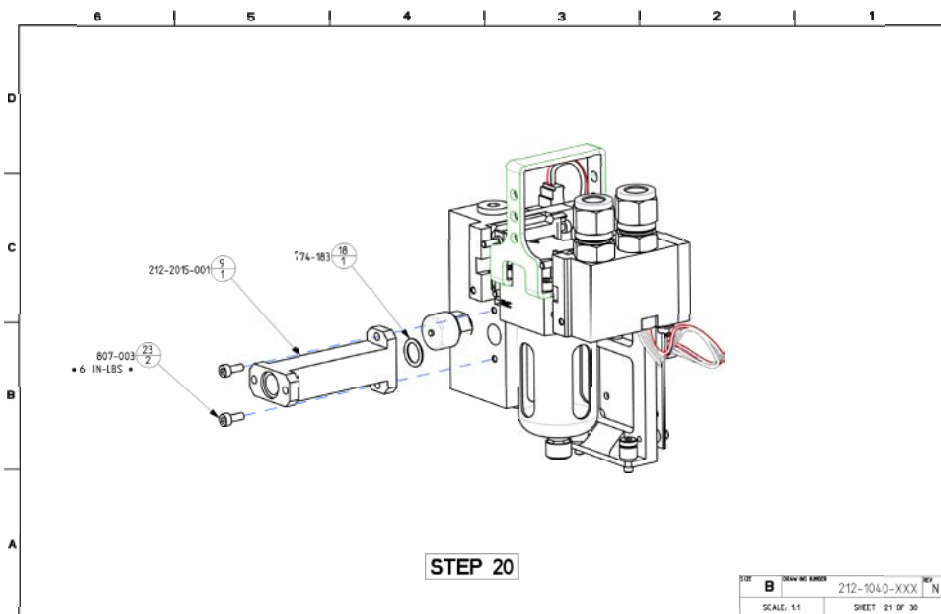
SCALE: 1:1
SHEET 4 OF 30

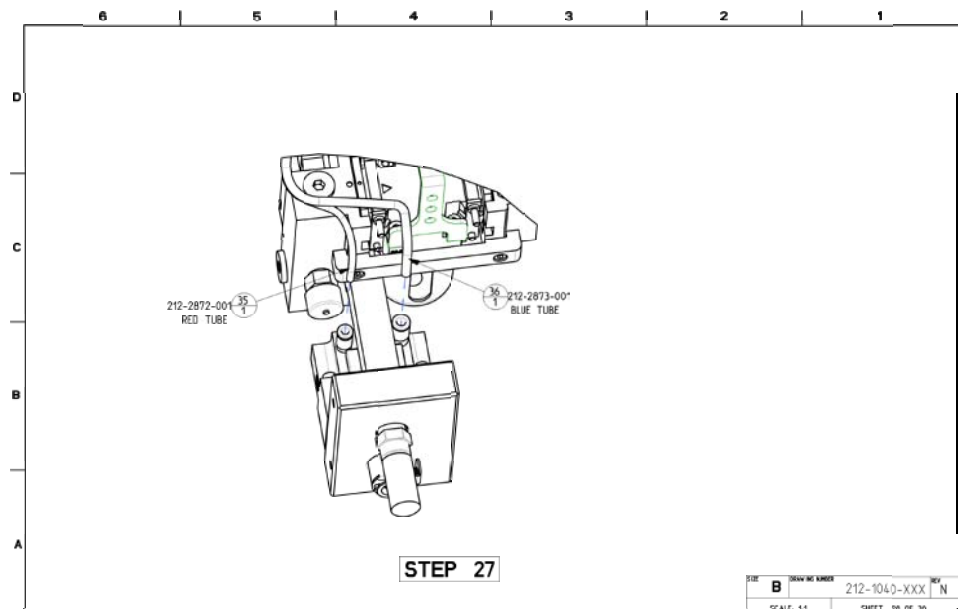
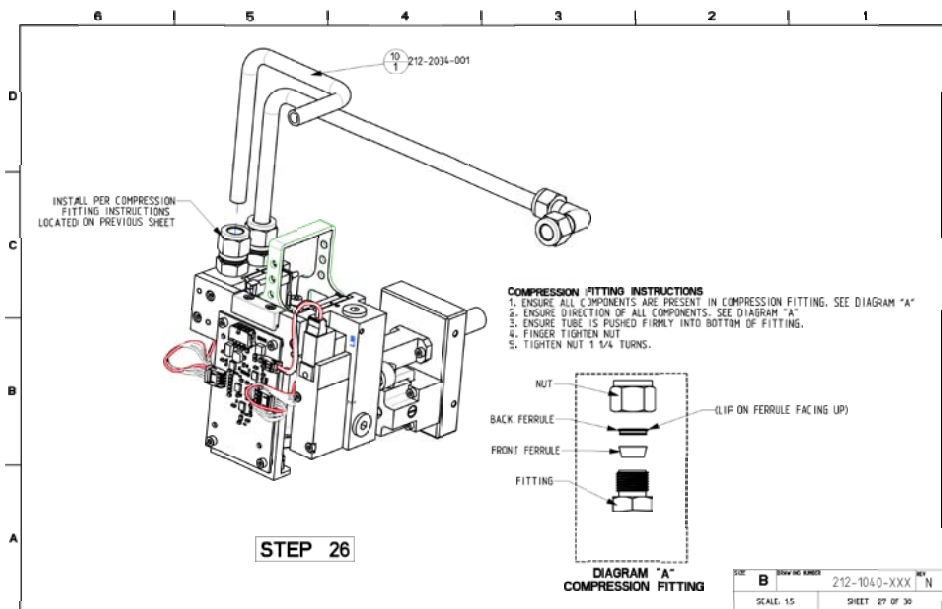
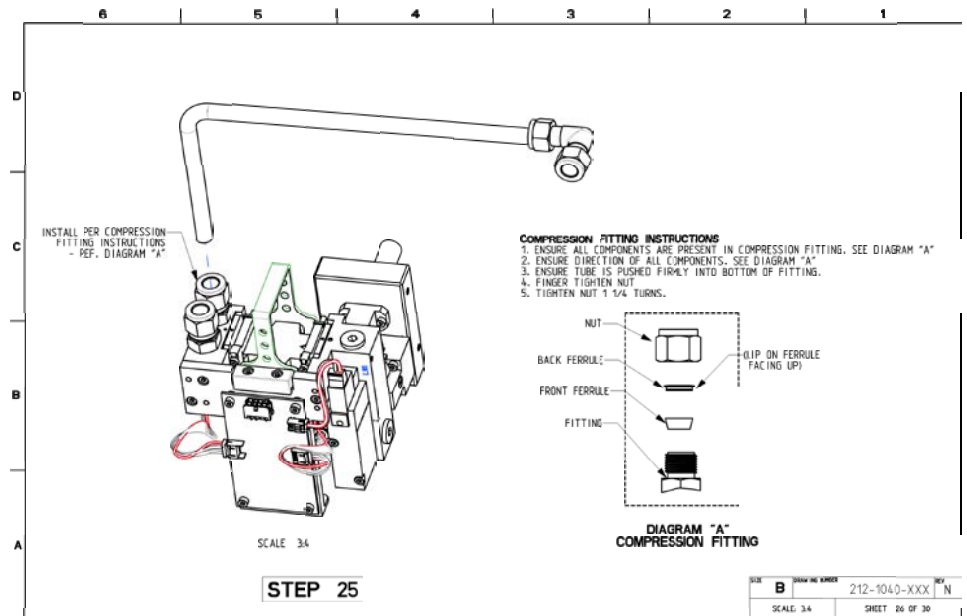
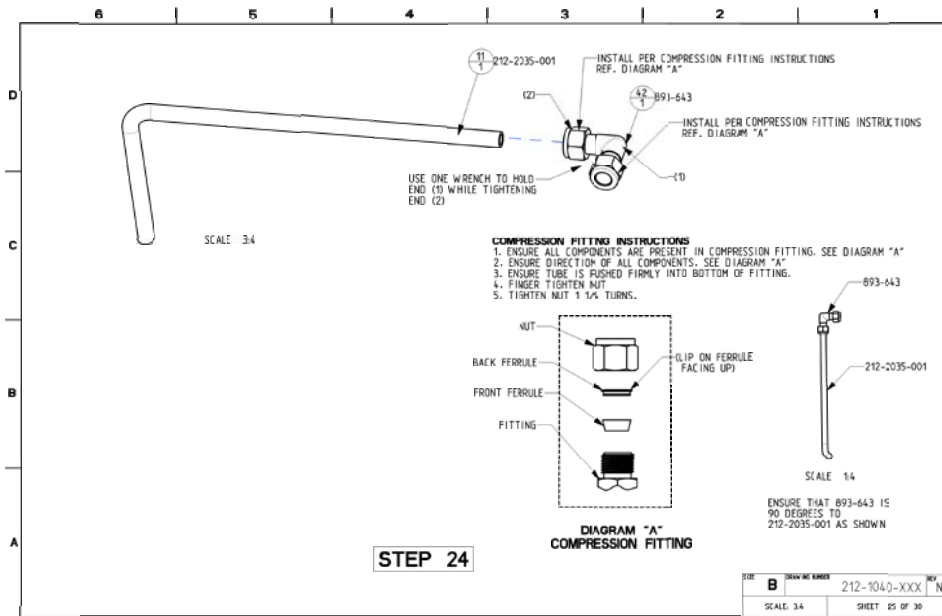


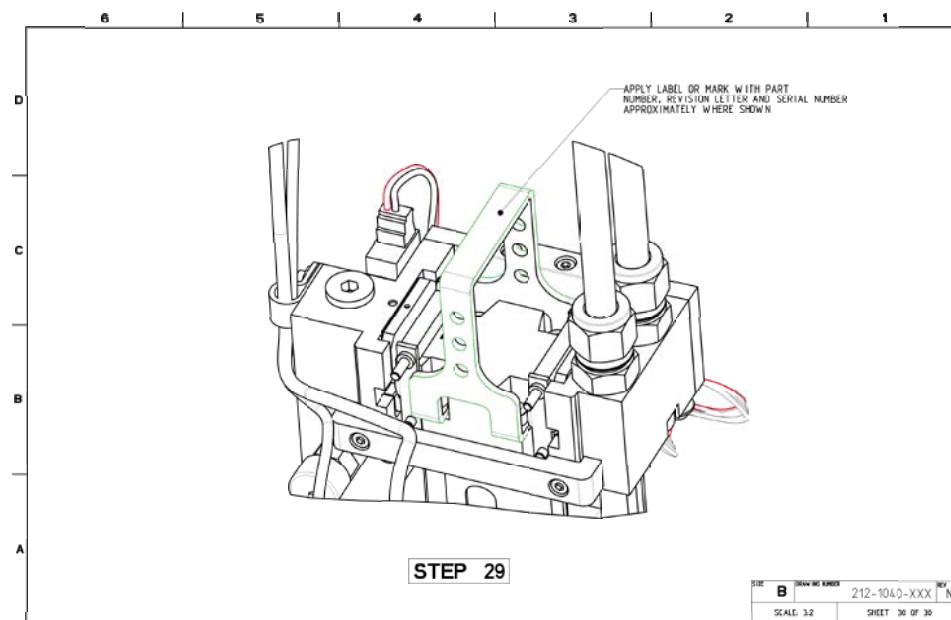
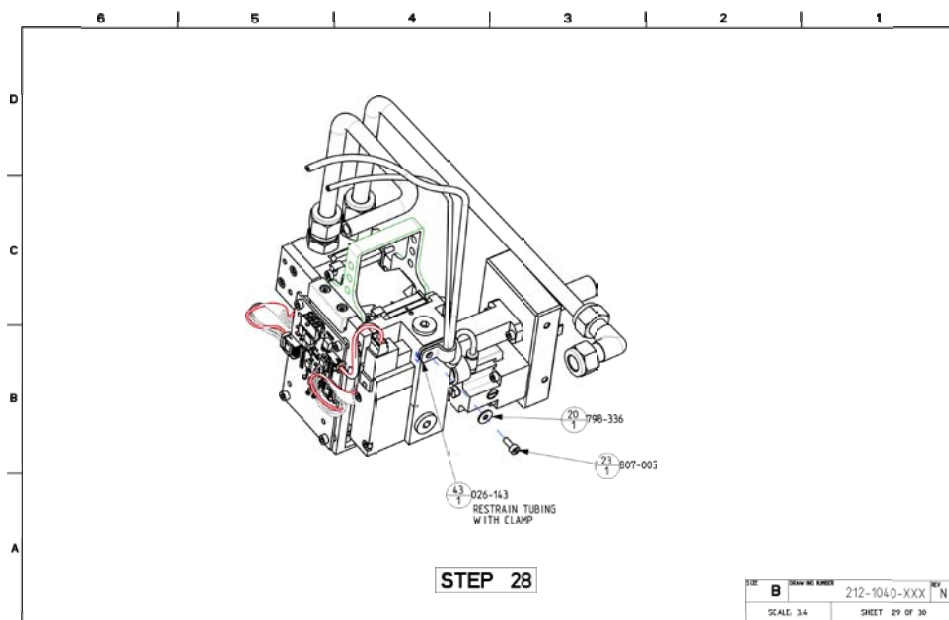












212-1047-501 ASSY, ILLUMINATOR, METAL HALIDE

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1758-501	ASSY,BALLAST,ILLUMINATOR XENON	1
002	212-2235-502	ASSY,ENCLOSURE,OPTICS	1
003	811-001	SCREW,FLAT HD SKT,M3X6 SST	25
004	212-1634-551	ASSY,PCB,TT ILLUM CONTROL	1
005	807-003	SCREW,CAP HD SKT,M3X8 SST	4
006	212-2198-001	CABLE ASSY,ILLUM BALLAST W50	1
007	212-2196-001	CABLE ASSY,ILLUM OPT INTFC	1
008	212-2054-001	CASE ASSY,ILLUMINATOR	1
009	212-3200-551	ASSY,PCB,ILLUMINATOR RFID CONT	1
010	212-2199-001	CABLE ASSY,ILLUM RFID	1
011	807-001	SCREW,CAP HD SKT,M3X5 SST	2
012	212-2162-001	PANEL,REAR,ILLUMINATOR	1
013	212-2378-001	GASKET,VENT,ILLUMINATOR	1
014	212-2179-001	PIN,LATCH	1
015	770-082	SCREW,FH PH,M4X0.70X6 SST	3
016	212-2161-001	BRACKET,PANEL,FRONT ILLUM	1
017	212-3072-502	ASSY,FACEPLATE,ILLUM TT IEC	1
018	807-007	SCREW,CAP HD SKT,M3X20 SST	2
019	212-2159-001	COVER,TOP,ILLUMINATOR	1
020	212-2973-001	LABEL,SERIAL NO,TT ILLUM	1
021	825-153	SCREW,CAP HD SKT,M3X4 SST	4
022	212-2887-001	GASKET,TABLE TOP,FACE PLATE	1
023	807-013	SCREW,CAP HD SKT,M4X8 SST	5
024	212-3000-001	CABLE ASSY,FBR DETECT,MOUNTED	2
025	212-3335-001	SCREW,CAP HD SKT,M2.5X4.07 SST	2

NOTES: UNLESS OTHERWISE SPECIFIED

- INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
- UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
- EXPLODED VIEW SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
- DELETED.
- FOR -SOME ONLY:
 - REPLACE THE FOLLOWING COMPONENTS:
 - LAMP XENON 212-3233-501 OR 212-3338-501
 - CABLE ASSY, STEPPER MOTOR 212-2656-001 (2X)
 - ASSY, PCB ATTENUATOR HOME SENSOR 212-2613-502 (2X)
 - NOTE FOR I AND II: IF SERVICE INTERVAL IS GREATER THAN 90 DAYS (INSTALLATION DATE - REPLACEMENT DATE), REPLACE STEPPER MOTOR. OTHERWISE, RECORD INSTALLATION AND REPLACEMENT DATES ON PRR AND PROCEED WITH TEST (INCL.)
 - CONFIRM SYSTEM IS USING PCBA 212-3336-501. IF PCBA USED IS 212-1974-501, REMOVE PCBA AND REPLACE WITH 212-3336-501
 - VERIFY THE FOLLOWING COMPONENTS HAVE NO CRACKS, SCRATCHES OR OTHER VISIBLE DEFECTS.
 - LENSES, ASPHERIC CONDENSING 212-1844-001 (2X)
 - LENSES ASPHERIC COLLIMATING 212-1843-001 (2X)
 - BLIND ATTENUATOR 212-2298-001 (2X)
 - DECODER ATTENUATOR 212-2298-001 (2X)
 - MIRROR COLO OPTICS 212-1715-001 (2X)
 - REFLECTOR D CHROIC, REAR 212-1977-001 (2X)
 - FILTER REJECTION HEAT UV BLOCK 212-1528-001 (2X)
 - REVIEW ALL HARDWARE/PCB REVISIONS:
 - PERFORM ALL MANDATORY UPDATES AS REQUIRED.
 - UPGRADE ANY OTHER HARDWARE/PCB COMPONENTS IF REVISION INVOLVES A MAJOR FUNCTIONAL CHANGE.
 - FOR ALL UNITS PERFORM MTP'S:
 - 907-2120-033
 - 907-2120-080
- BUILD PER MAP 992-2120-042 AND TEST PER 907-2120-080.

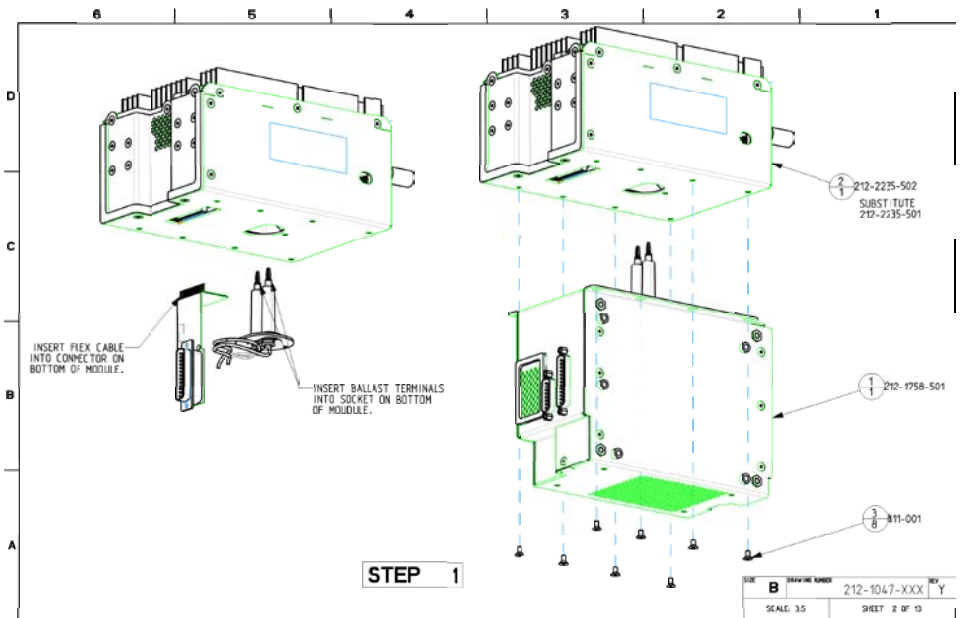
3D VIEW

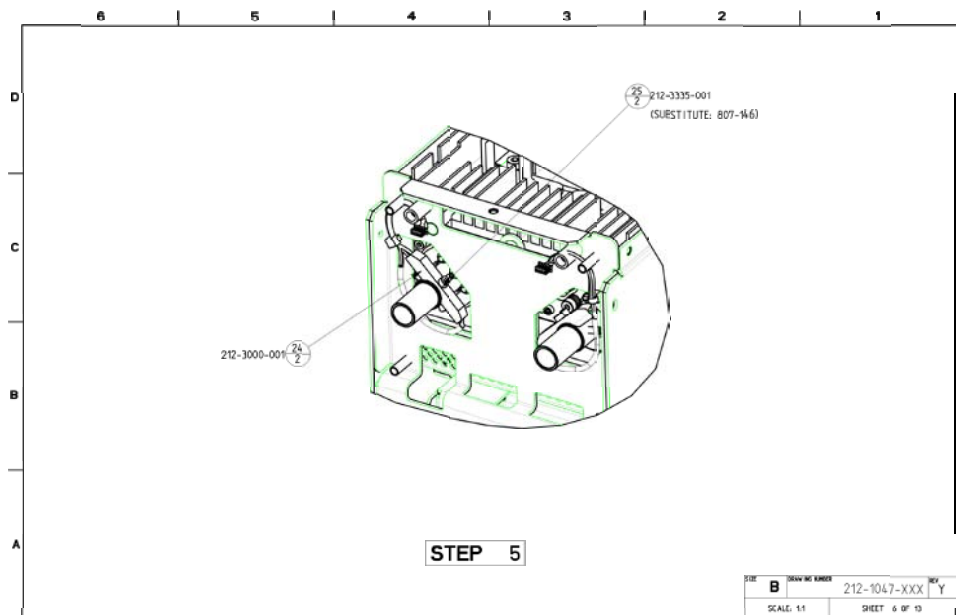
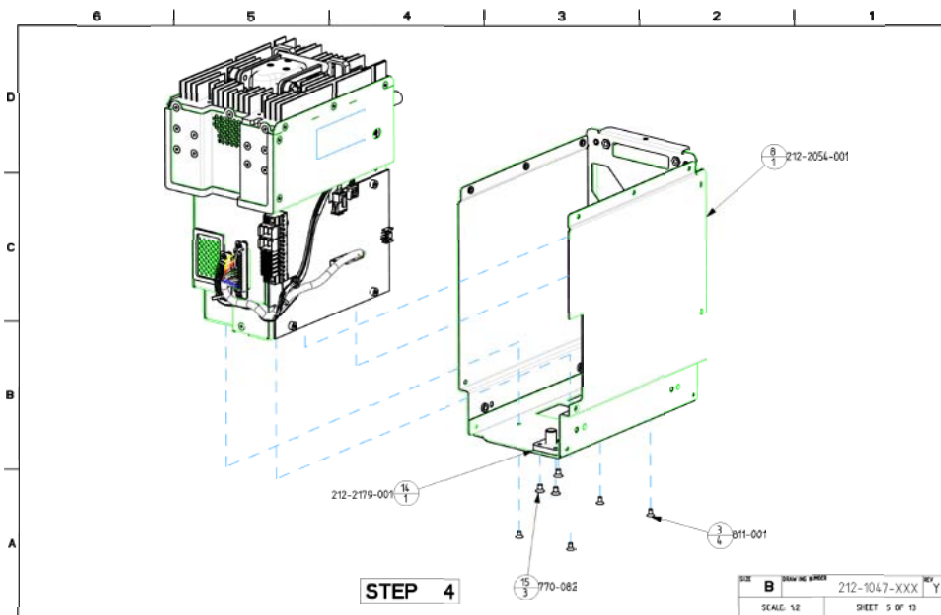
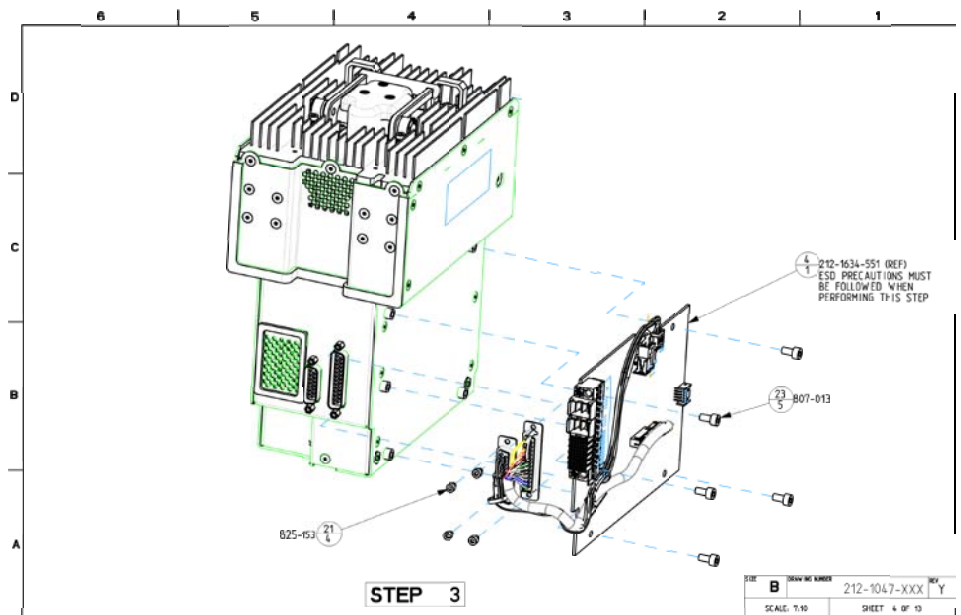
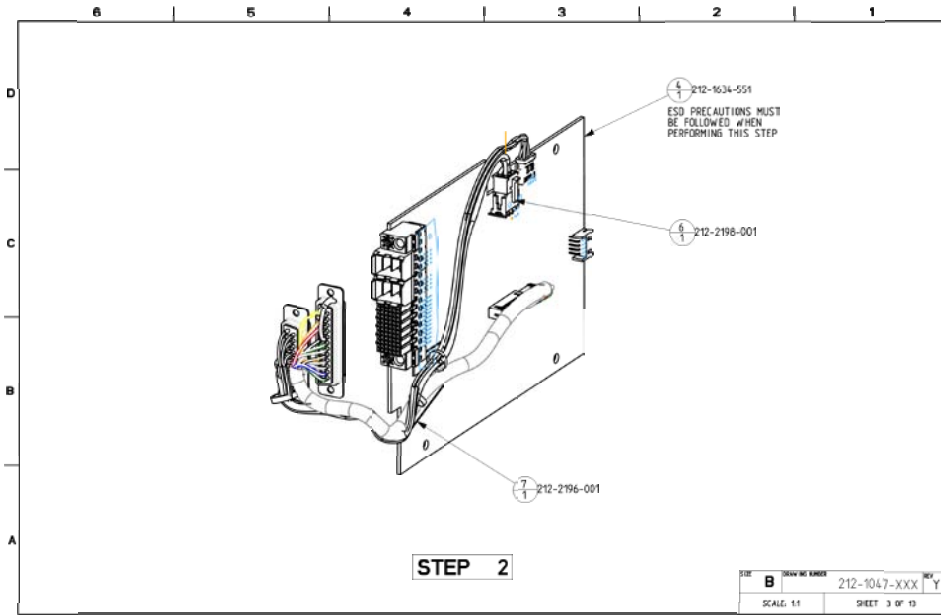
TABULATION

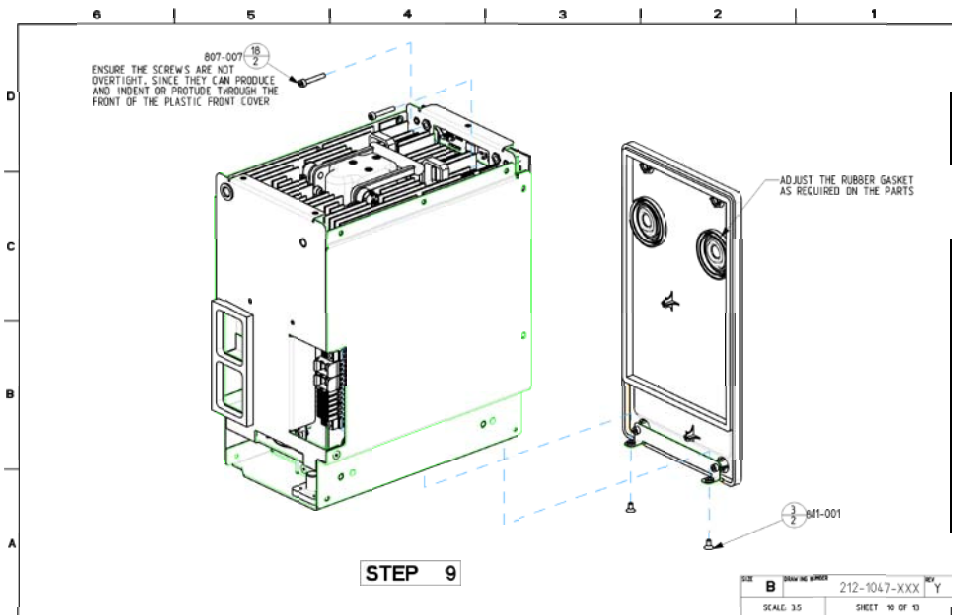
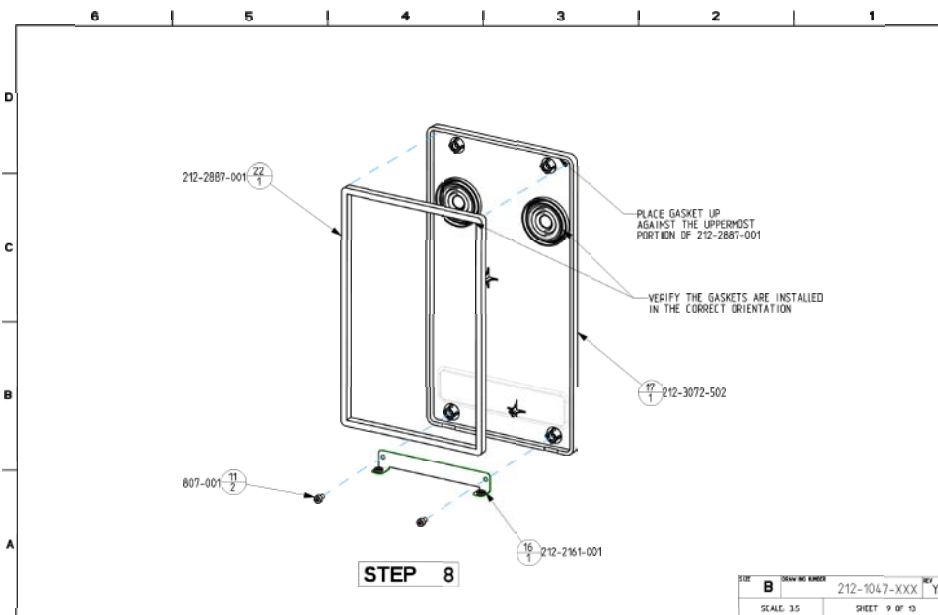
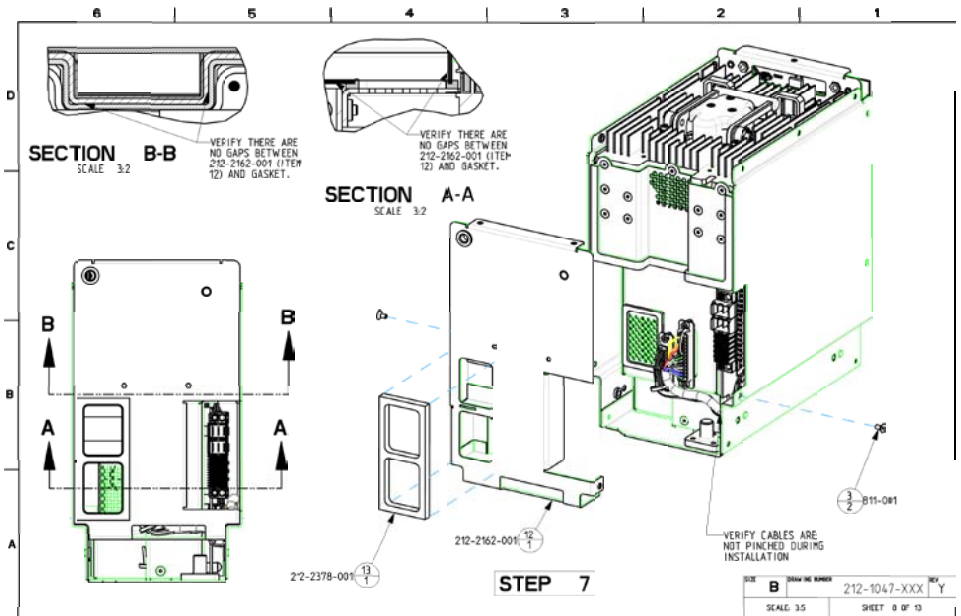
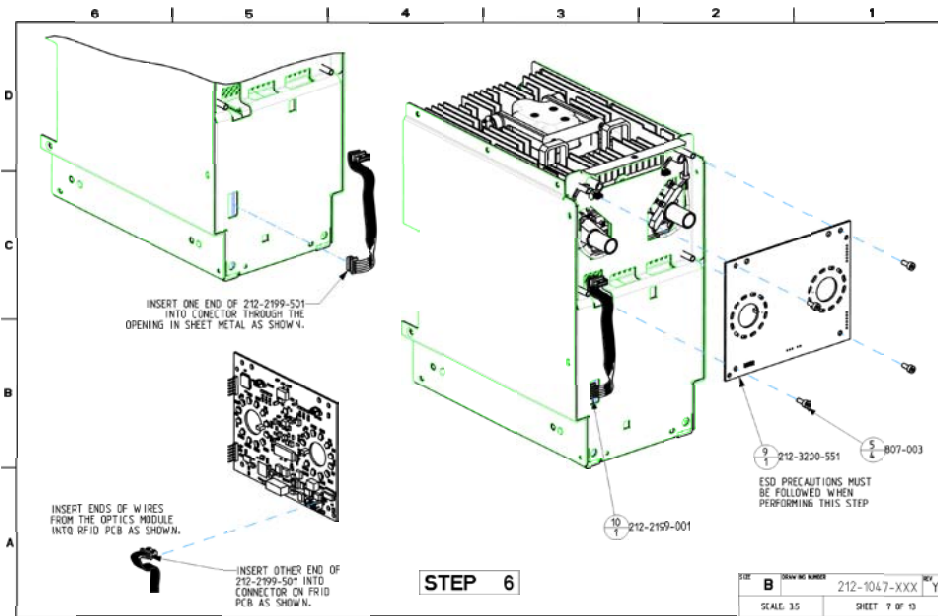
CAT/REF/PN	REV	DESCRIPTION	P/N	P/N	DESCRIPTION	
212-1047-501	Y	ASSY, ILLUMINATOR, TABLETOP	-501S	ASSY, ILLUM, TABLE TOP SERVICE	-501S	ASSY, ILLUM, TABLE TOP EXCHANGE

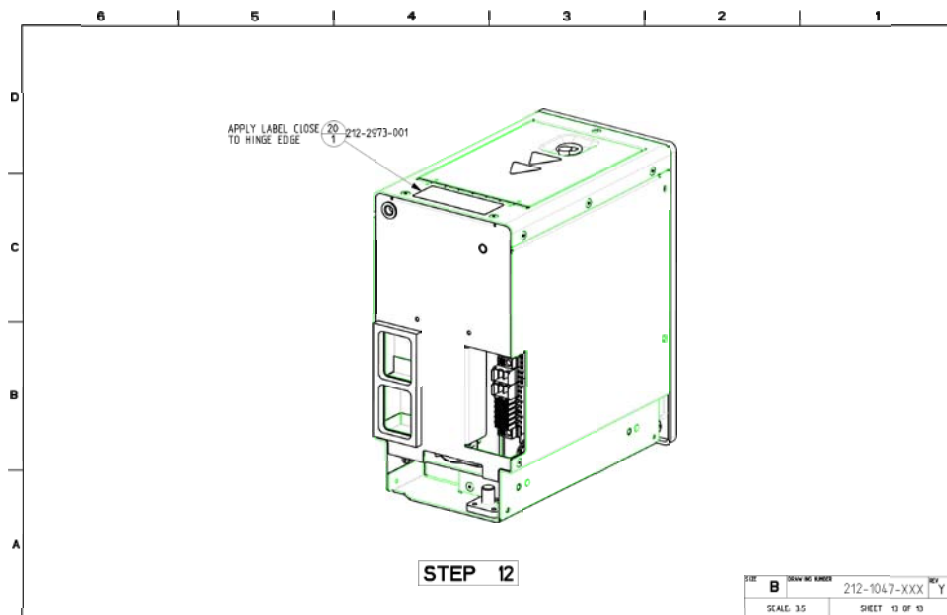
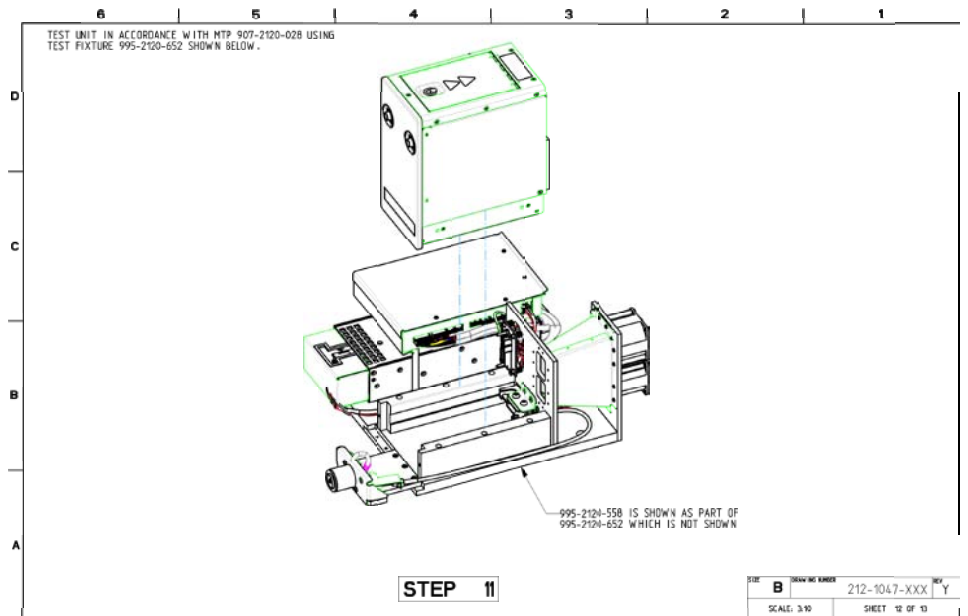
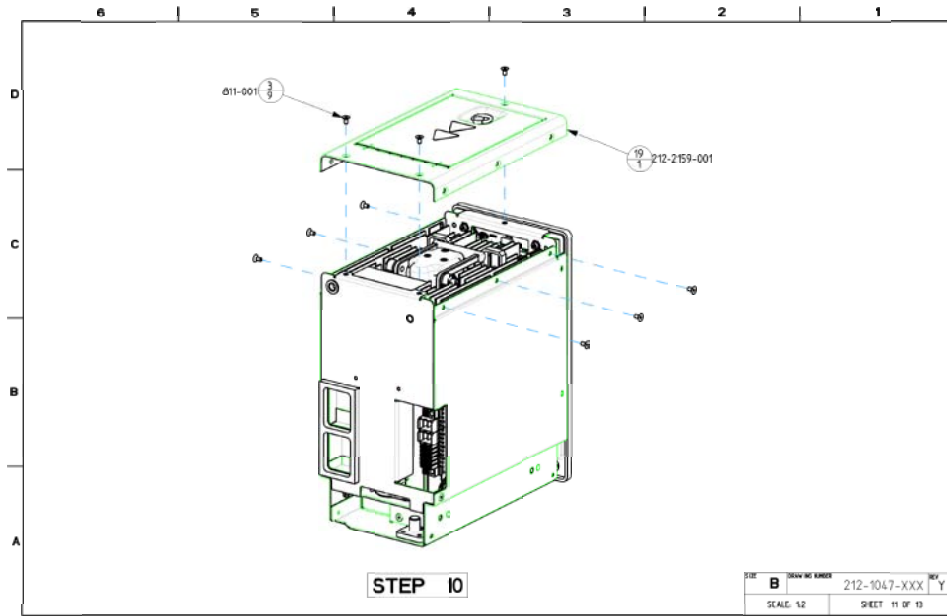
SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
<p>BILL OF MATERIAL</p> <p>BY: A. FERMIN DATE: 08/22/06 CHECKED: P. NGUYEN DATE: 08/22/06 APPROVED: M. MARTIN DATE: 08/22/06 PRINTED: 2/23/2007</p> <p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION OF ALCON.</p> <p>Alcon Irvine, California 92618</p> <p>DESCRIPTION: ASSY, ILLUMINATOR, TABLETOP SIZE: B DRAWING NUMBER: 212-1047-XXX REV: Y SCALE: 1:20 SHEET 1 OF 13</p> <p>PDM LINK MODEL ATTRIBUTES NAME: 212-1047-501_PDF VERSION: Y.1</p>				









212-1758-501 ASSY, BALLAST, ILLUM XENON

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2980-001	BALLAST,24V,TABLE TOP ILL	1
002	212-2603-001	PLUG,BANANA, .125 4-40X.480L	2
003	212-2719-001	PLUG,OUTPUT,BALLAST	1
004	212-2876-001	GASKET,DUCT,BALLAST TT-ILLUM	1
005	212-2655-001	CABLE ASSY,BALLAST INTFC	1
006	212-2134-001	CHASSIS,BASE,BALLAST	1
007	212-2531-002	CABLE,FLEX CIRCUIT,ILLUM W49	1
008	775-034	GASKET,EMI,25 PIN D CONN	1
009	775-033	GASKET,EMI,15P D-CONN	1
010	212-2176-001	COVER,BALLAST,REAR	1
011	816-308	STANDOFF,M/F,M3X.05X4.5MM SST	4
012	811-001	SCREW,FLAT HD SKT,M3X6 SST	14
013	212-2175-001	COVER,BALLAST,FRONT	1
015	892-042	ADHESIVE,THREADLOCKER,242 BLUE	AR
016	891-032	LUBRICANT,COND GRS,SILICONE	1

AR = As Required

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (00) ON TOP AND QUANTITY (1) ON BOTTOM.
4. ASSEMBLE PER MAP 992-2120-042

REVISION HISTORY

REV	ECN	DATE
P17	NOT RELEASED	03/06/08
A	20080750	03/13/08
B	20081673	05/30/08
C	20100590	04/23/10
D	20100917	6/22/10
E	CN051961ECN	11/23/14
F	CN055745ECN	05/30/14

SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	A.FERMIN	DATE	08/21/05	
CHECKED	S. NEWTON	DATE	09/20/06	
APPROVED	M. MARTIN	DATE	08/21/05	
FORMED REVIEW		DATE	2/23/2007	
PDM LINK MODEL ATTRIBUTES		NAME: 212-1758-501.PROC		VERSION: F.3

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF ALCON.

Alcon
Irvine, California 92618

DESCRIPTION: ASSY,BALLAST,ILLUMINATOR XENON
SIZE: B DRAWING NUMBER: 212-1758-501 REV: F
SCALE: 3:4 SHEET: 1 OF 8

REMOVE LEAD AND SCREW INTO TERMINAL

212-2603-001

212-2719-001

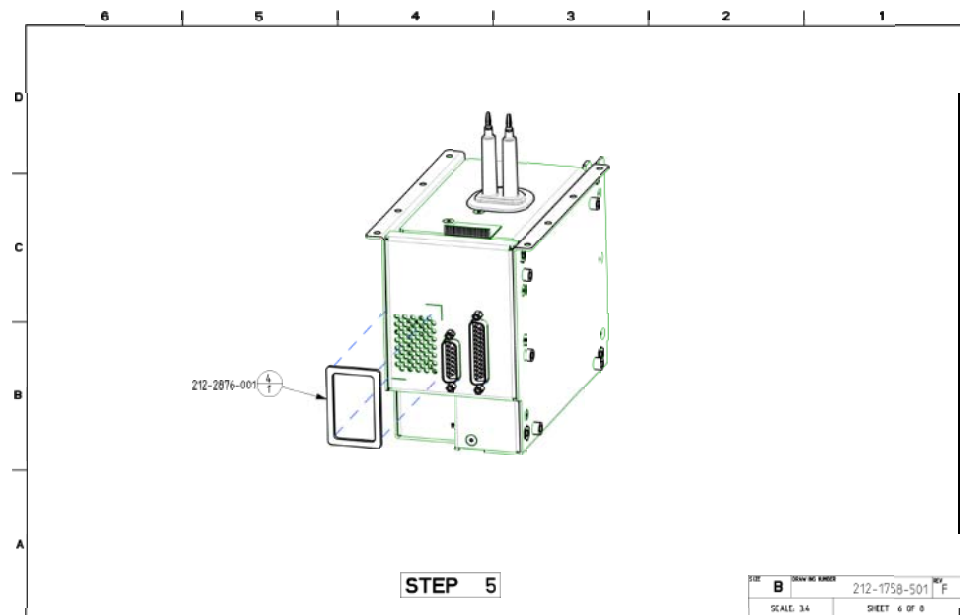
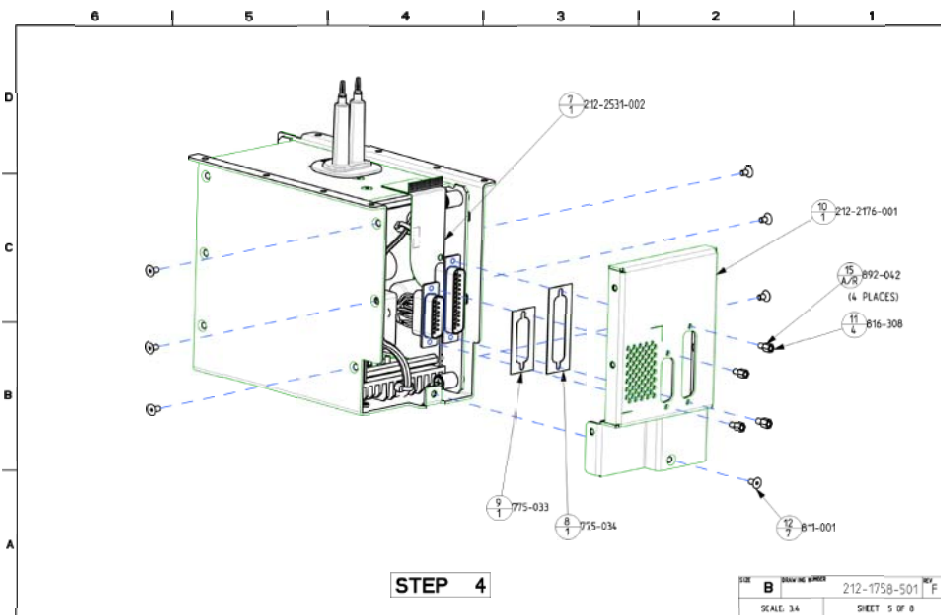
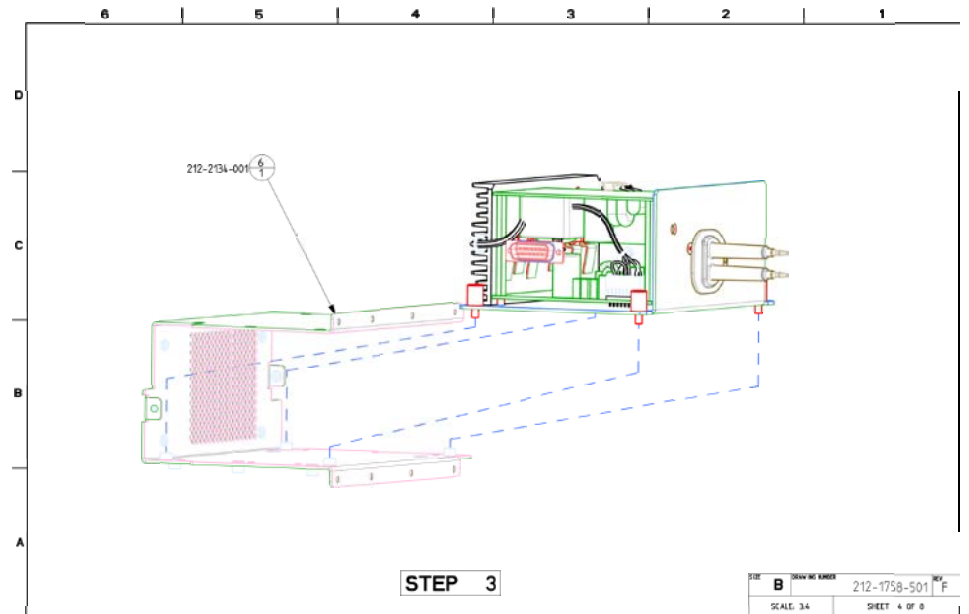
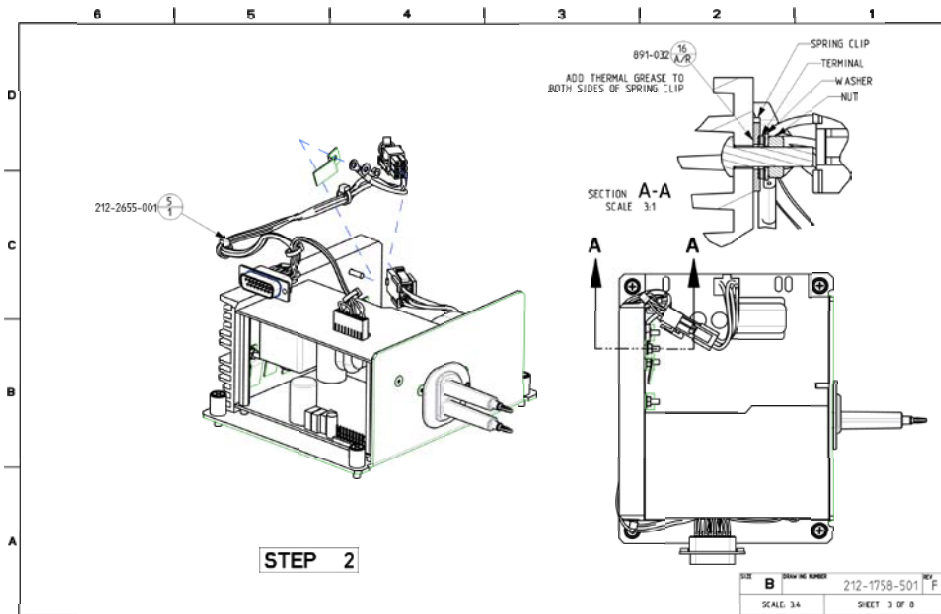
INSERT CABLE WITH RED SHRINK WRAP INTO PLUG LOCATION LABELED "RED"

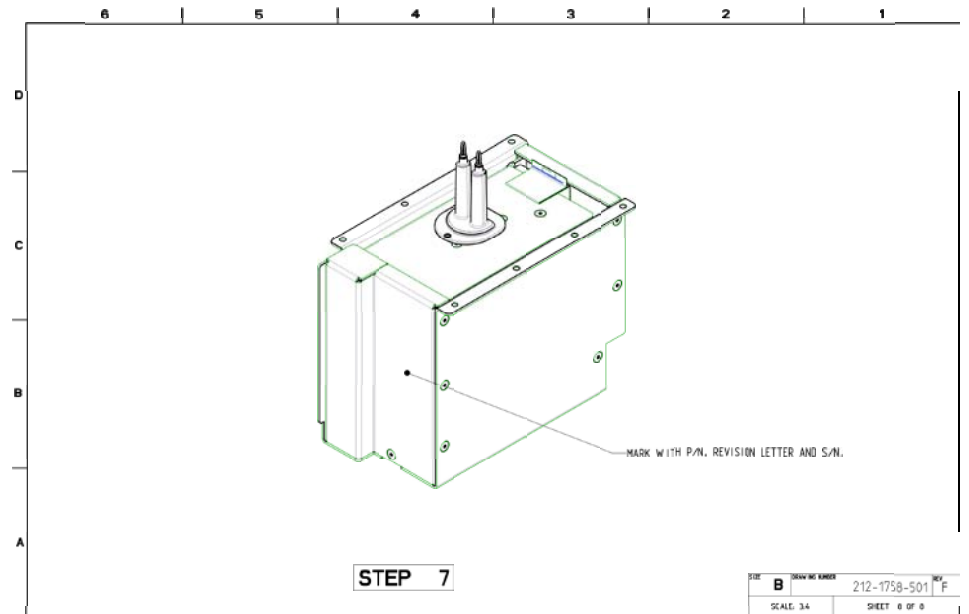
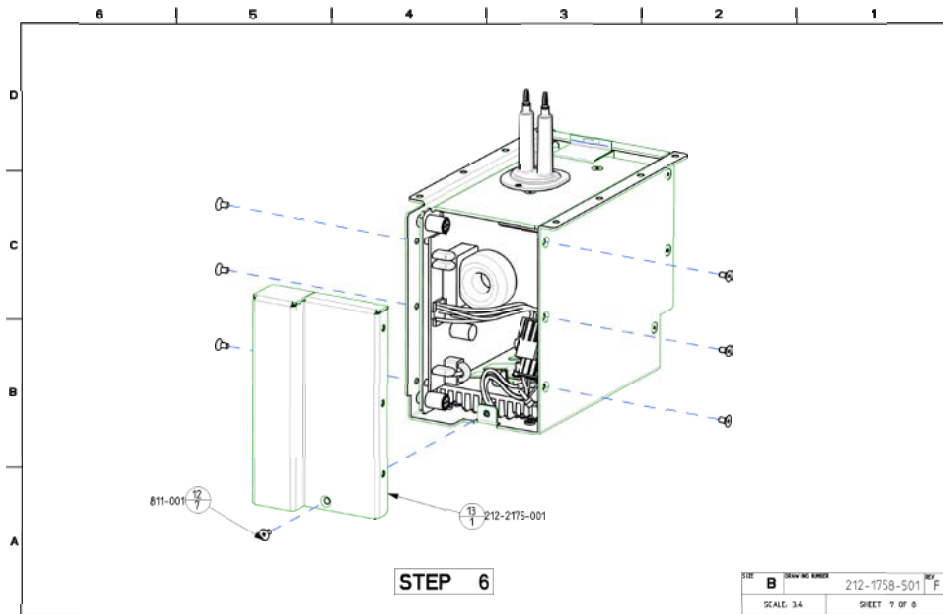
212-2980-001

ONCE ASSEMBLED PUSH CABLES BACK INTO HOLES IN 212-2980-001 UNTIL 212-2719-001 IS IN CONTACT WITH TOP SURFACE

STEP 1

SIZE: B DRAWING NUMBER: 212-1758-501 REV: F
SCALE: 3:4 SHEET: 2 OF 8





212-2235-502 ASSY, ENCLOSURE OPTICS

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2528-001	ARM ASSY, LEVER, OPTICS	1
002	600-196	BEARING, FLANGED, .25X.38X.25L	2
003	212-2567-001	SUPPORT, SHAFT, ILLUM	3
004	773-073	RING, RETAINING, .250X.027 EXT	2
005	691-328	SPRING, CPRSN, .313X.24 DIA SST	4
006	814-005	SCREW, SHLDR, SKT HD M3X10.013	5
007	212-2908-001	HEATSINK, MAIN, ILLUMINATOR	1
008	212-2330-001	HEAT SINK, CHANNEL, UPPER	1
009	807-003	SCREW, CAP HD SKT, M3X8 SST	4
010	212-2830-001	GASKET, UPPER, OPTICS	1
011	212-3231-501	ASSY, BASE, TRAIN OPTICS	1
012	809-003	SCREW, BTN HD SKT, M3X10 SST	4
014	212-2133-001	BASE, CHASSIS, OPTICS	1
015	812-001	SCREW, FLAT HD SKT, M3X6 BLK	25
016	212-2177-001	PANEL, OPTICS, REAR	1
017	212-2427-001	COLLECTOR, IR, ILLUM FIN	1
018	212-2831-001	GASKET, REAR, OPTICS	1
019	212-2869-001	GASKET, DUCT, OPTICS ILLUM	1
020	212-2574-001	GASKET, FILTER, COLOR	2
021	212-2511-001	CARRIER, COLOR FILTER, RIGHT	1
022	892-013	ADHESIVE, THREADLOCKER, 290 GRN	AR
023	674-190	PLUNGER, BALL, M4X9 SST	2
024	212-2571-001	CARRIER, COLOR FILTER, LEFT	1
025	212-2576-001	BRACKET, FILTER, COLOR	2
026	807-011	SCREW, CAP HD SKT, M4X5 SST	2
028	212-3338-501	ASSY, LAMP, XENON OSRAM	1
029	212-3230-501	ASSY, PORT OUTPUT, ILLUM	1
030	212-3228-501	ASSY, BLOCK, TRAIN OPTICS	1
031	212-2851-001	HEATSINK, REFLECTOR	1
032	212-3229-501	ASSY, MIRROR COLD, OPTICS	1
033	782-263	SCREW, SHLDR, SKT M3X8 416 SST	5
034	809-001	SCREW, BTN HD SKT, M3X6 SST	5
035	212-2379-001	INSULATOR, MOUNT, LAMP	1
036	807-147	SCREW, CAP HD SKT, M2.5X5 SST	8
037	212-3392-SSC	KIT, SSC, ILLUM OPTICS ENCL 1	1
038	212-3393-SSC	KIT, SSC, ILLUM OPTICS ENCL 2	1

AR = As Required

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE SPECIFIED, MANUFACTURED ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. SHOWS ITEM NUMBER (X) ON THE TOP AND QUANTITY (Y) ON BOTTOM.
4. BUILD PER 992-2120-C42 AND TEST PER 907-2120-033.
5. FOR -502 PERMANENTLY MARK WITH "TT ONLY"
FOR -503 PERMANENTLY MARK WITH "AUX ONLY"
6. 212-2235-501 IS ON A SEPARATE STAND ALONE DRAWING.

3D VIEW

TABULATION BLOCK 6

REV	PART NUMBER	DESCRIPTION
K	212-2235-502	ASSY, ENCLOSURE, OPTICS
K	212-2235-503	ASSY, ENCLOSURE, OPTICS AUX

SEE SEPARATE PARTS LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	212-2235-502	ASSY, ENCLOSURE, OPTICS		

REVISION HISTORY

REV	ECN	DATE
P1	NOT RELEASED	08/06/09
A	20091449	08/06/09
B	20092365	2/2/10
C	20100443	3/25/10
D	20101686	10/06/10
E	CN018605ECN	16/14/11
F	CN019381ECN	07/08/11
G	CN029808ECN	05/21/12
H	CN053256ECN	03/06/14
J	CN054592ECN	05/27/14
K	CN050740ECN	07/21/14

PERSONNEL

NAME	DATE	FUNCTION
J. ATHERLEY	5/12/09	DESIGNER
B. LEE	5/12/09	CHECKER
G. TOMESCU	5/12/09	APPROVER

DATE: 2/23/2007

NAME: 212-2235-502.DWG

VERSION: E.1

SCALE: 3/4

SHEET 1 OF 10

STEP 1

DO NOT TOUCH LENSES WHEN HANDLING

HANG INDICATED ARM ON INDICATED SURFACES

HANG INDICATED ARM ON INDICATED SURFACES

212-3228-501
212-3228-503
SUBSTITUTE

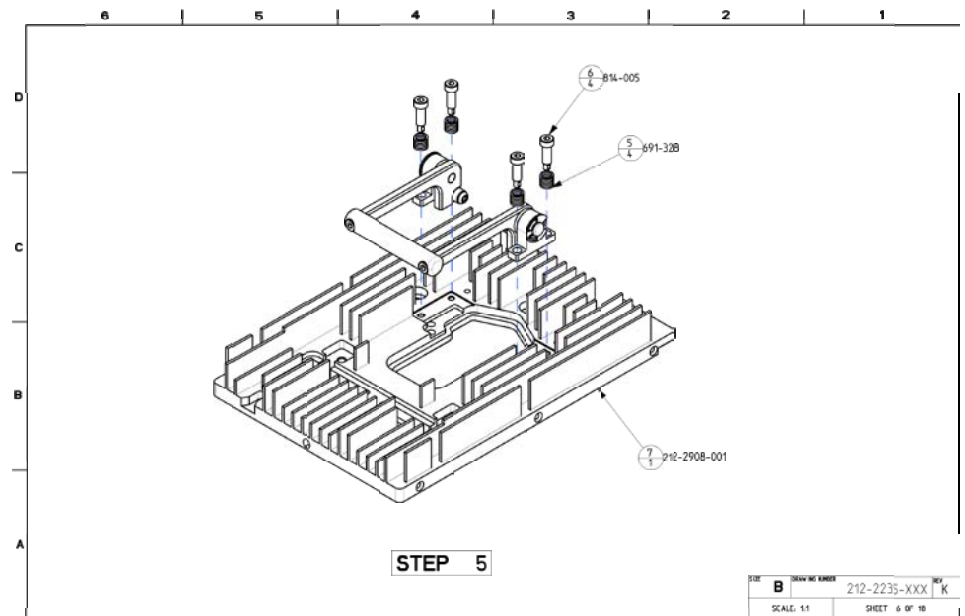
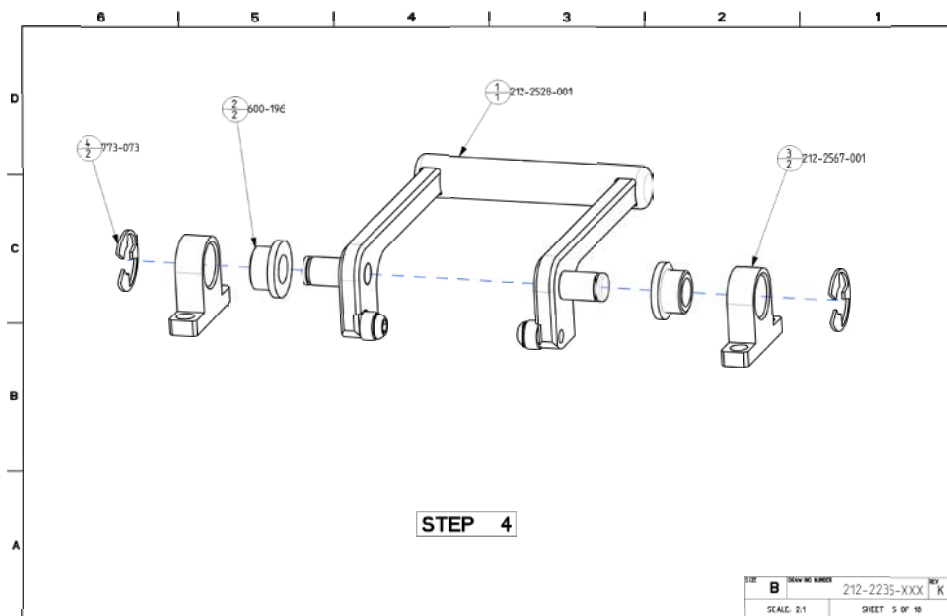
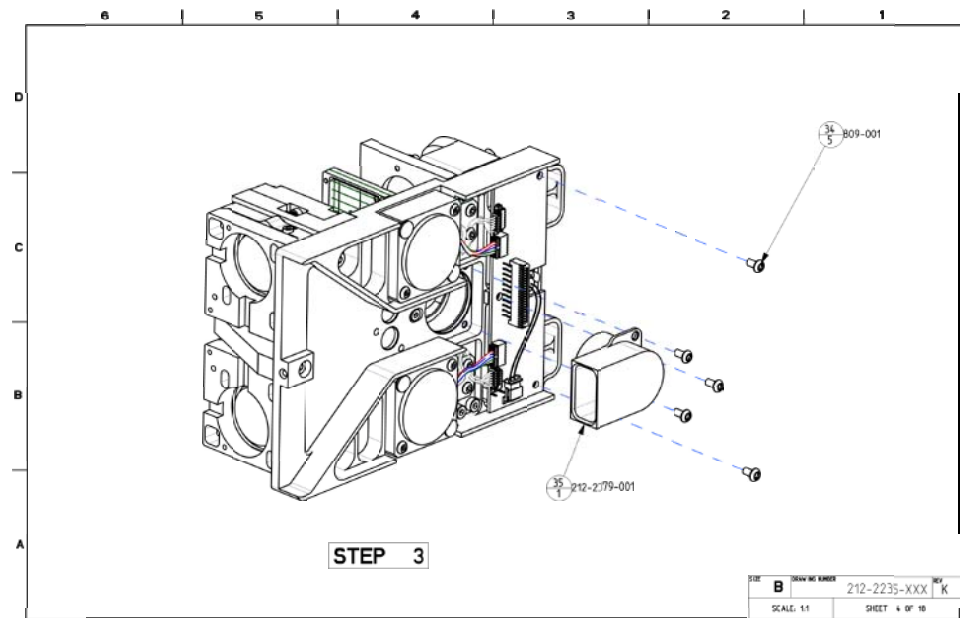
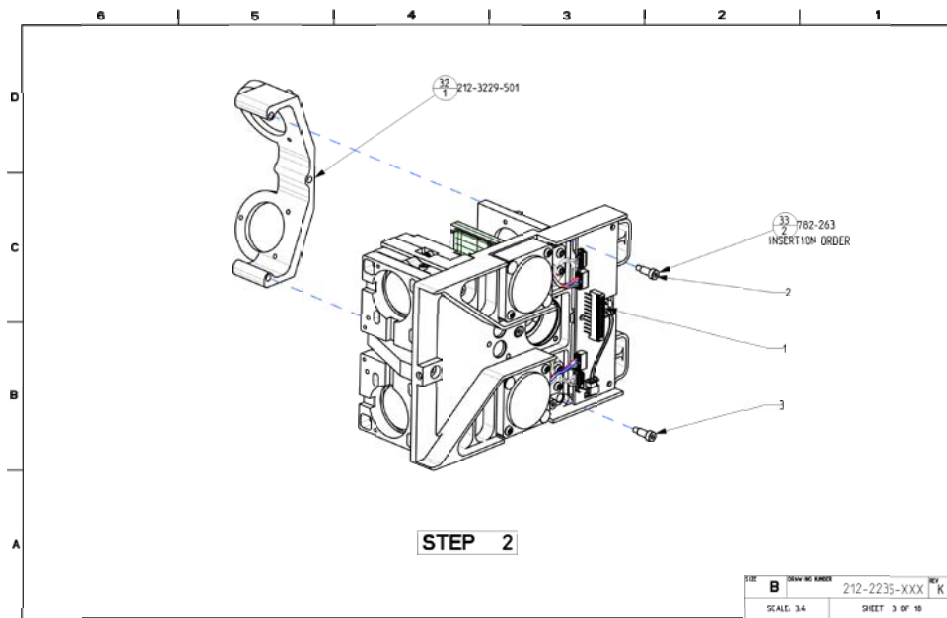
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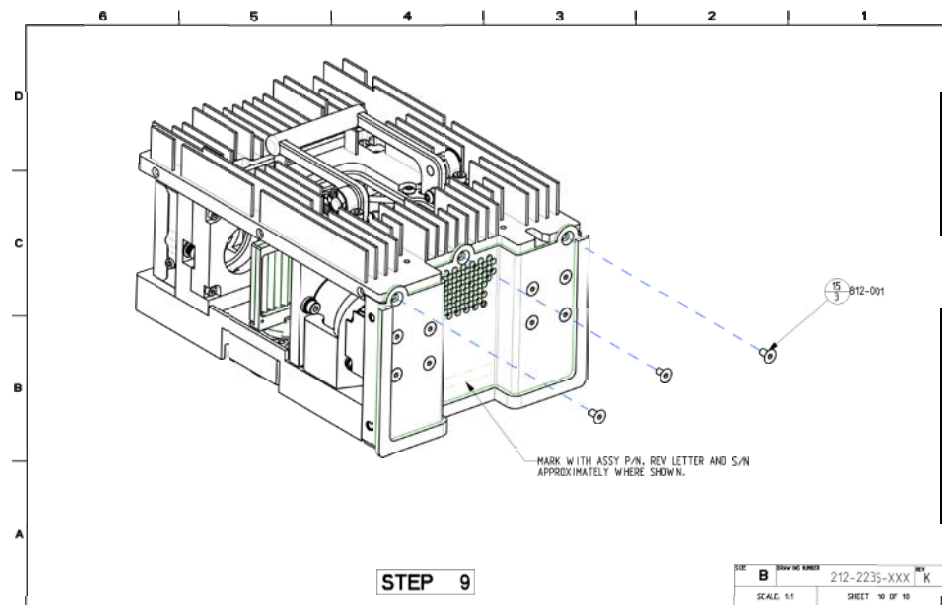
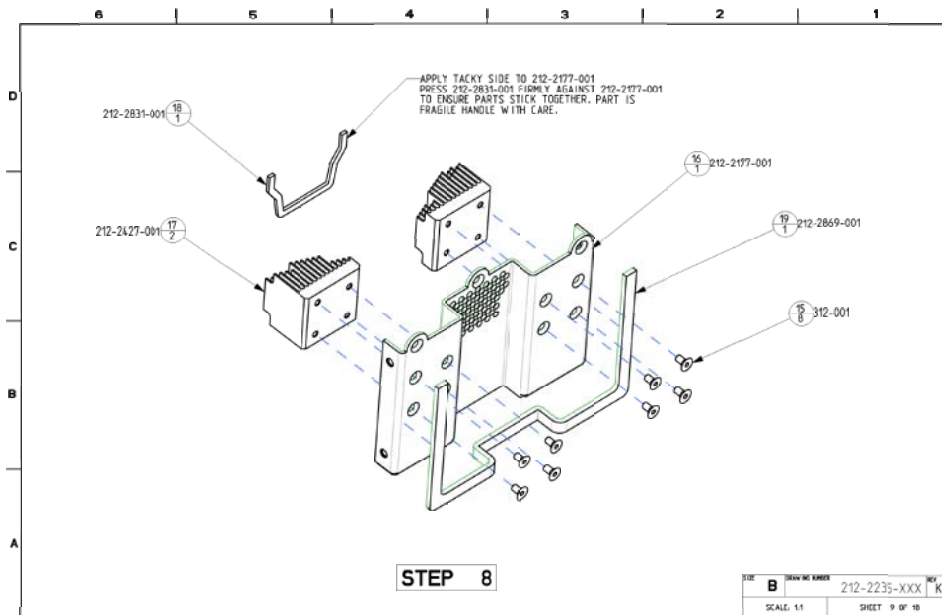
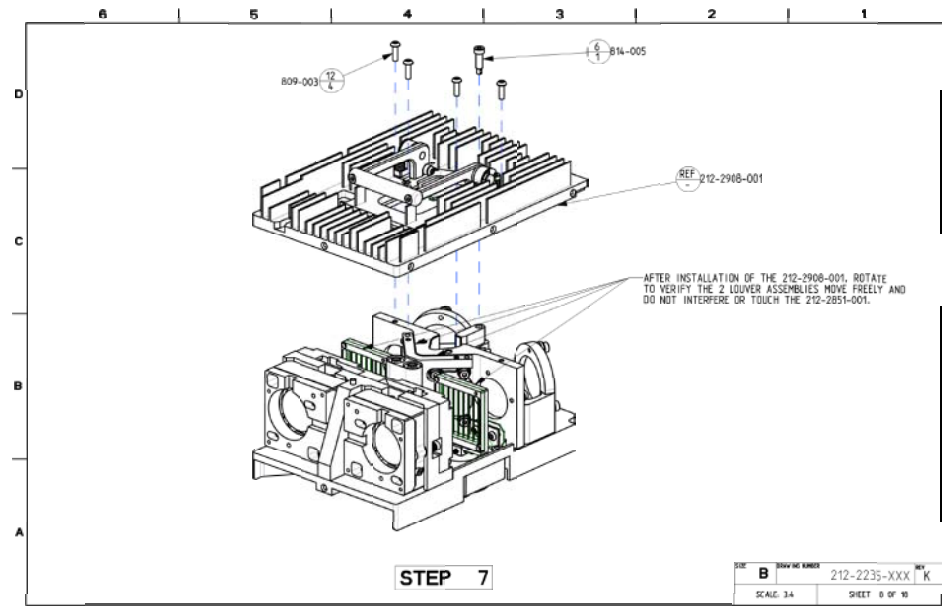
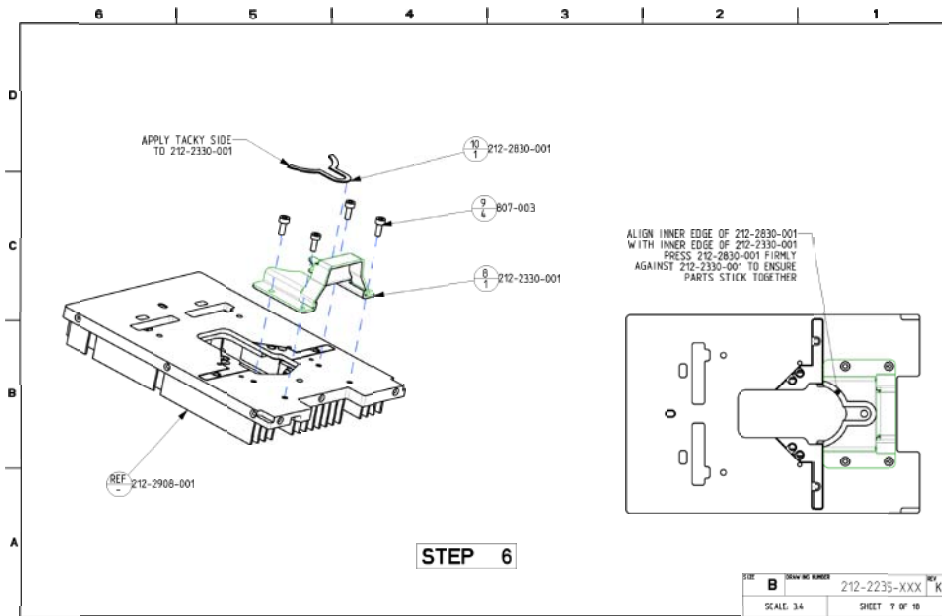
212-3228-501 FOR -502
212-3228-503 FOR -503

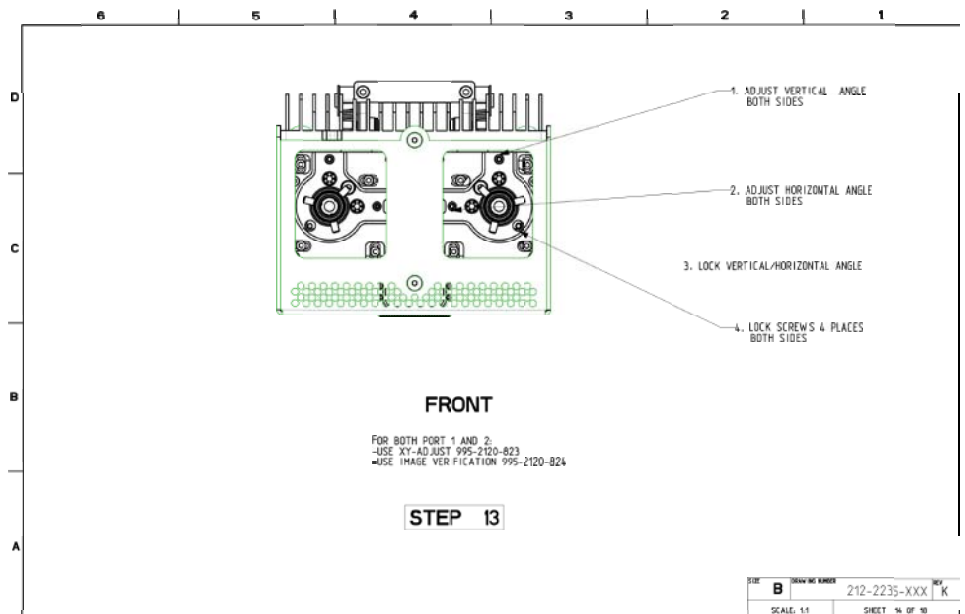
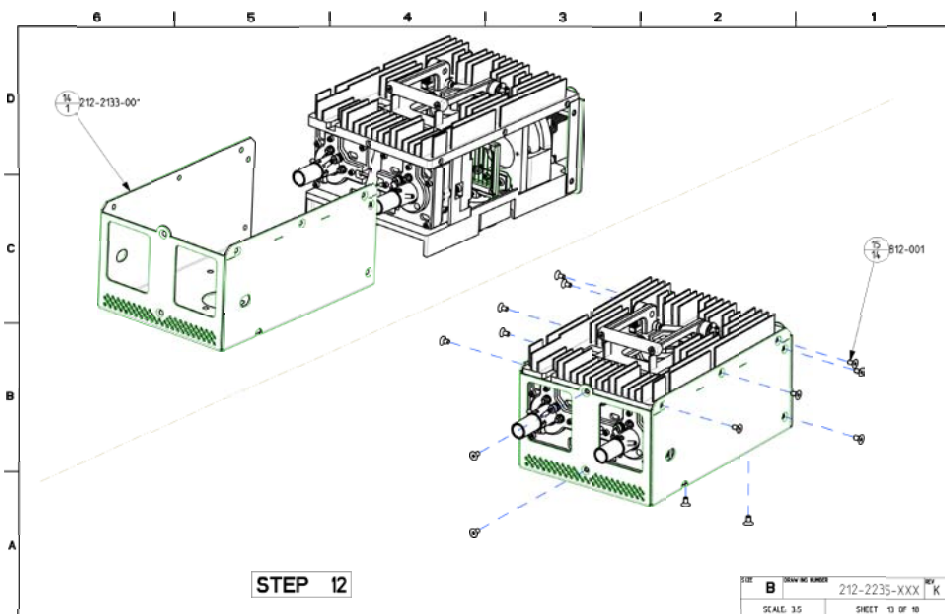
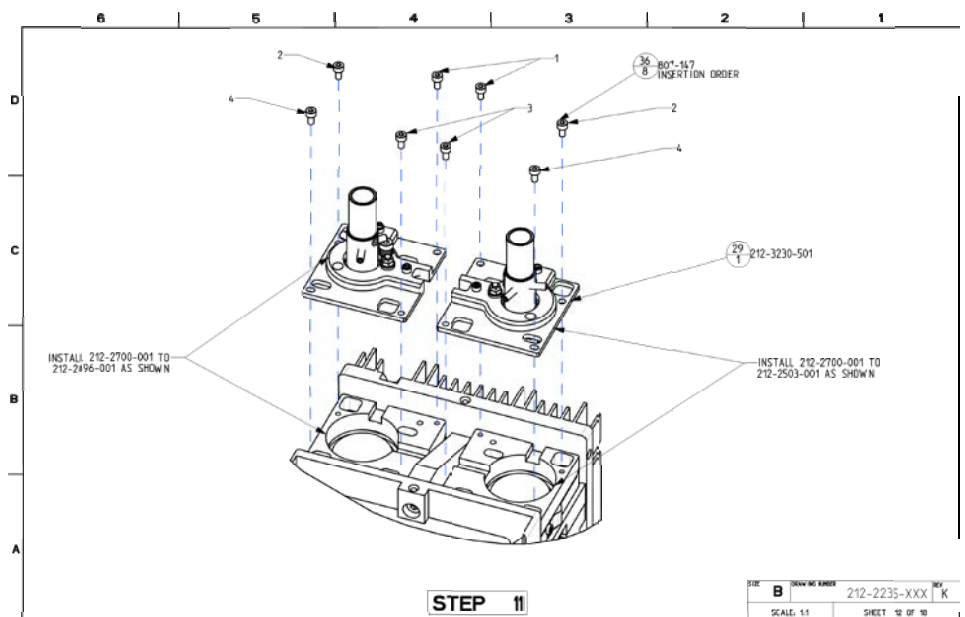
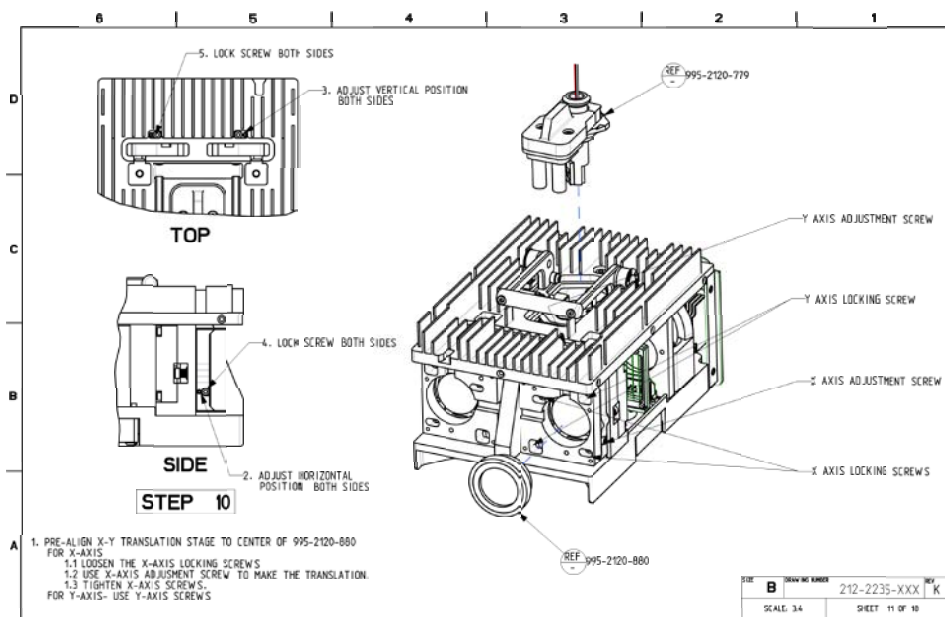
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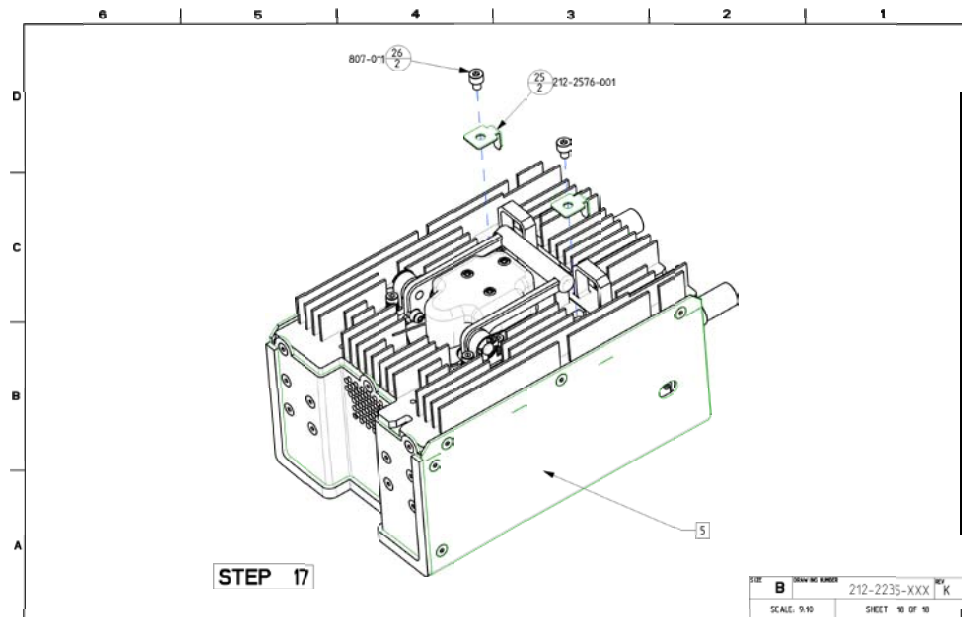
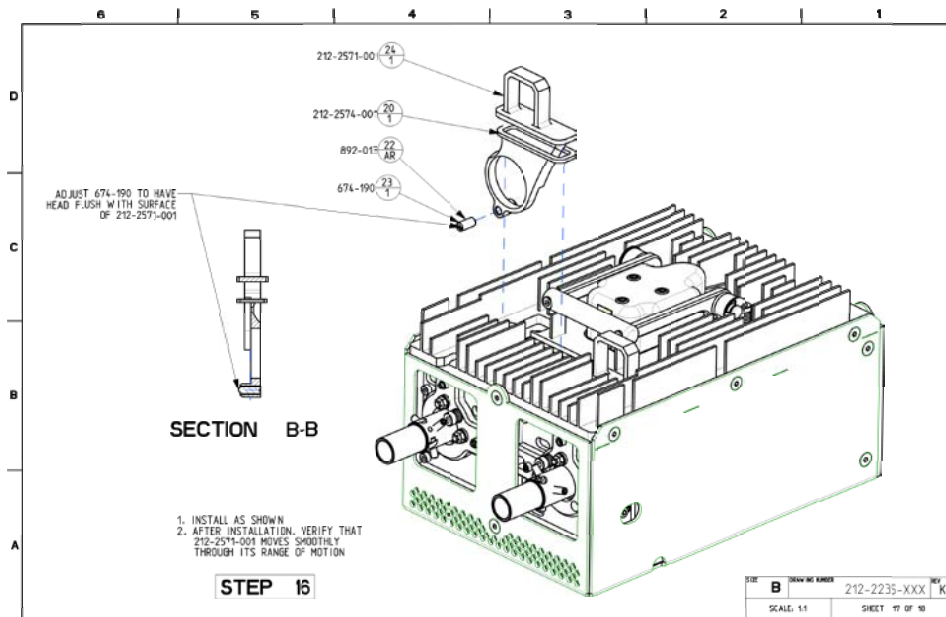
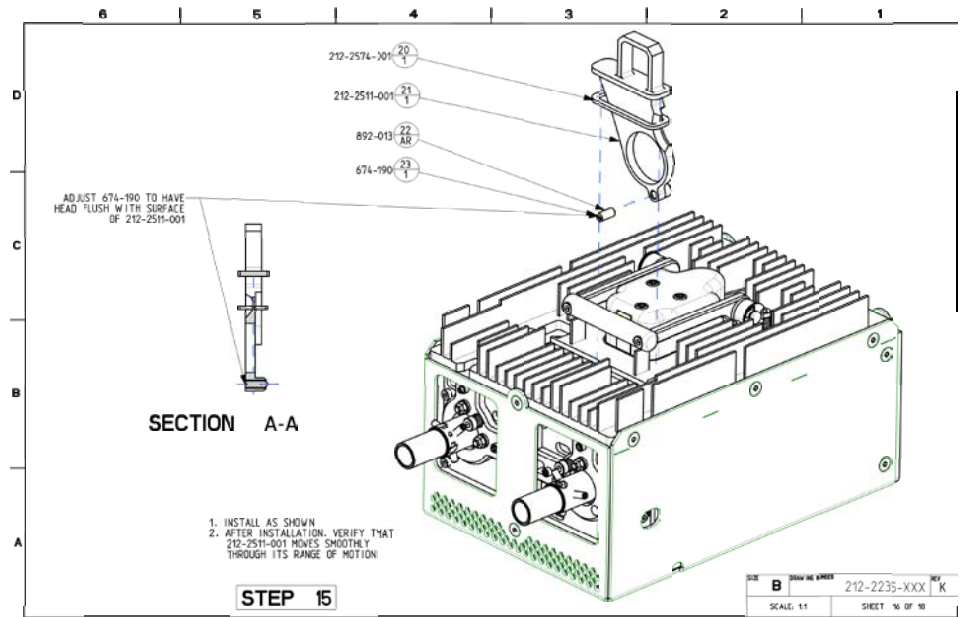
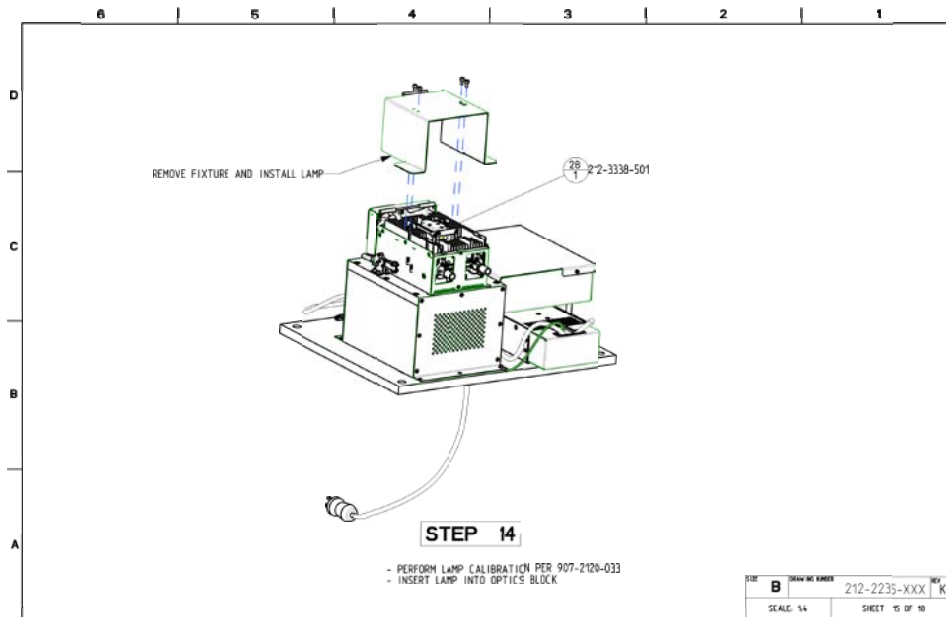
SCALE: 1:10

SHEET 2 OF 10









212-3245-501 ASSY, FLUIDICS

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2255-502	ASSY,MANIFOLD,PRIMARY	1
004	212-3150-501	ASSY,FACEPLATE	1
006	023-092	CABLE,RIBBON,26 COND 20 INCH	1
007	807-004	SCREW,CAP HD SKT,M3X10 SST	5
008	212-3306-001	COVER,ACCESS,NIFS	1
009	807-005	SCREW,CAP HD SKT,M3X12 SST	2
010	829-001	SCREW,FLT HD,M3X0.5X6 SST W/CT	31
011	807-013	SCREW,CAP HD SKT,M4X8 SST	2
012	796-125	WASHER,FLAT,.172X.625X.030 SST	1
013	796-126	WASHER,FLAT,RECT .375X.750 SST	1
014	212-2362-501	ASSY,ACTUATOR,MOUNTING	1
015	212-2516-001	BARREL,CABLE,RELEASE	1
016	212-2515-001	NUT,CABLE,RELEASE	1
017	691-323	SPRING,EXT,.50ODX2.0LX.037THK	1
024	212-2013-001	SCREW,CAPTIVE,18-8 SST	4
025	212-1892-004	CLIP,CASSETTE,RETAINING 90DEG	4
026	212-1901-001	WASHER,CLAMP	4
027	809-110	SCREW,BTN HD SKT,M2X6 SST	4
028	796-126	WASHER,FLAT,RECT .375X.750 SST	4
029	827-006	SCREW,CAP HD,M5X.8X25 SST W/CT	4
030	212-2256-501	ASSY,WHEEL,ACTUATOR	1
031	212-1903-001	PIN,LINKAGE,CASSETTE CLAMP	2
032	674-197	PIN,COTTER,.125ID INTERNAL	2
033	773-093	RING,RETAINING,3/8 SHAFT SST	1
034	212-1707-001	SHAFT,TRANSFER	1
035	773-106	RING,RETAINING,.312 SHAFT SST	2
036	212-1951-001	SPACER,LINK,TRANSFER	1
037	807-015	SCREW,CAP HD SKT,M4X12 SST	2
038	212-3208-001	BRACKET ASSY,ENCLOSURE,MACH	1
039	212-3249-551	ASSY,PCB,FLOW SENSOR	1
040	212-2936-502	ASSY,FLUIDICS,CTRL W/KERNEL	1
042	807-001	SCREW,CAP HD SKT,M3X5 SST	22
043	807-142	SCREW,CAP HD SKT,M2.0X6 SST	4
044	212-2120-001	BRACKET,BOARD,MAIN	1
045	212-2557-001	TRAY,BOTTOM,FLUIDICS	1
046	212-2118-001	TRAY,ENCLOSURE	1
047	809-006	SCREW,BTN HD SKT,M4X8 SST	8

ITEM #	PART NUMBER	DESCRIPTION	QTY
049	212-2617-001	BRACKET,TUBE,HOSPITAL	1
050	663-019	GROMMET,RUBBER,.69X.38	1
051	212-2291-001	CABLE ASSY,SUCTION CNTRL,W86	1
052	212-2252-001	CABLE ASSY,INF CONTROLLER,W88	1
053	212-2211-001	BRACKET,ACTUATOR,ATTACHMENT	1
054	801-005	WASHER,FLAT,M5 SST	3
055	807-026	SCREW,CAP HD SKT,M5X10 SST	3
058	212-1981-001	BRACKET,MOUNT,PUMP	1
059	212-2290-001	CABLE ASSY,LPAS PUMP,W104	1
060	807-002	SCREW,CAP HD SKT,M3X6 SST	2
061	663-057	GROMMET,ISLR,.245ID W/O FERR	3
062	801-003	WASHER,FLAT,M3 SST	15
064	212-1473-551	ASSY,PCB,FLUIDICS SUCTION	1
065	807-147	SCREW,CAP HD SKT,M2.5X5 SST	4
066	801-025	WASHER,FLAT,M2.5 SST	4
067	212-2294-001	CABLE ASSY,SMC/CASS REL,W95	1
069	212-2555-001	TUBING,HOSPITAL,FORMED .375OD	1
070	212-2742-001	BRACKET,FAN	1
071	212-3548-001	CABLE ASSY,FAN,W160 & W84 II	2
072	809-103	SCREW,BTN HD SKT,M4X6 SST	2
073	807-009	SCREW,CAP HD SKT,M3X30 SST	8
074	212-2542-001	COVER,HOUSING,FLUIDICS	1
075	796-013	WASHER,FLAT,NO.10 SST	1
077	674-182	FASTENER,BALL STUD,ZINC PLATE	4
078	212-2759-001	FERRULE,M4,THREADED	3
079	212-2736-001	COVER,RETENTION,WIRE	1
080	212-2935-001	SHIELD,EMI,RJ45 FLUIDICS	1
084	809-001	SCREW,BTN HD SKT,M3X6 SST	2
085	893-630	FITTING,CLAMP,TUBE .281 ID BRS	2
086	212-2284-001	CABLE ASSY,POS SENS PINCH,W105	1
087	212-2643-001	SPACER,SENSOR,POSITION	8
088	828-002	SCREW,CAP,BTN HD M3X0.5X10 CTN	4
089	026-059	CLAMP,CABLE,.187 DIA NYLON	3
090	603-035	BUSHING,SNAP,.261DX.45ODX.26L	1
091	796-144	WASHER,FLAT,.381X.495X.035 SST	1
092	774-178	O-RING,.239IDX.379OD,VITON	5
093	827-002	SCREW,CAP HD,M2X0.4X8 SST W/CT	2

ITEM #	PART NUMBER	DESCRIPTION	QTY
094	827-012	SCREW,CAP HD,M3X.5X8 SST W/CT	3
095	892-042	ADHESIVE,THREADLOCKER,242 BLUE	AR
096	212-3477-001	FRAME ASSY,REC MECH	1
AR = As Required			


212-3245-502 ASSY, FLUIDICS

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2255-503	ASSY,MANIFOLD,PRIMARY	1
004	212-3150-502	ASSY,FACEPLATE	1
006	023-092	CABLE,RIBBON,26 COND 20 INCH	1
007	807-004	SCREW,CAP HD SKT,M3X10 SST	5
008	212-3306-001	COVER,ACCESS,NIFS	1
009	807-005	SCREW,CAP HD SKT,M3X12 SST	2
010	829-001	SCREW,FLT HD,M3X0.5X6 SST W/CT	31
011	807-013	SCREW,CAP HD SKT,M4X8 SST	2
012	796-125	WASHER,FLAT,.172X.625X.030 SST	1
013	796-126	WASHER,FLAT,RECT .375X.750 SST	1
014	212-2362-501	ASSY,ACTUATOR,MOUNTING	1
015	212-2516-001	BARREL,CABLE,RELEASE	1
016	212-2515-001	NUT,CABLE,RELEASE	1
017	691-323	SPRING,EXT,.50ODX2.0LX.037THK	1
024	212-2013-001	SCREW,CAPTIVE,18-8 SST	4
025	212-1892-004	CLIP,CASSETTE,RETAINING 90DEG	4
026	212-1901-001	WASHER,CLAMP	4
027	809-110	SCREW,BTN HD SKT,M2X6 SST	4
028	796-126	WASHER,FLAT,RECT .375X.750 SST	4
029	827-006	SCREW,CAP HD,M5X.8X25 SST W/CT	4
030	212-2256-501	ASSY,WHEEL,ACTUATOR	1
031	212-1903-001	PIN,LINKAGE,CASSETTE CLAMP	2
032	674-197	PIN,COTTER,.125ID INTERNAL	2
033	773-093	RING,RETAINING,3/8 SHAFT SST	1
034	212-1707-001	SHAFT,TRANSFER	1
035	773-106	RING,RETAINING,.312 SHAFT SST	2
036	212-1951-001	SPACER,LINK,TRANSFER	1
037	807-015	SCREW,CAP HD SKT,M4X12 SST	2
038	212-3208-001	BRACKET ASSY,ENCLOSURE,MACH	1
039	212-3249-551	ASSY,PCB,FLOW SENSOR	1
040	212-2936-502	ASSY,FLUIDICS,CTRL W/KERNEL	1
042	807-001	SCREW,CAP HD SKT,M3X5 SST	22
043	807-142	SCREW,CAP HD SKT,M2.0X6 SST	4
044	212-2120-001	BRACKET,BOARD,MAIN	1
045	212-2557-001	TRAY,BOTTOM,FLUIDICS	1
046	212-2118-001	TRAY,ENCLOSURE	1
047	809-006	SCREW,BTN HD SKT,M4X8 SST	8

ITEM #	PART NUMBER	DESCRIPTION	QTY
048	801-004	WASHER,FLAT,M4 SST	4
049	212-2617-001	BRACKET,TUBE,HOSPITAL	1
050	663-019	GROMMET,RUBBER,.69X.38	1
051	212-2291-001	CABLE ASSY,SUCTION CNTRL,W86	1
052	212-2252-001	CABLE ASSY,INF CONTROLLER,W88	1
053	212-2211-001	BRACKET,ACTUATOR,ATTACHMENT	1
054	801-005	WASHER,FLAT,M5 SST	3
055	807-026	SCREW,CAP HD SKT,M5X10 SST	3
058	212-1981-001	BRACKET,MOUNT,PUMP	1
059	212-2290-001	CABLE ASSY,LPAS PUMP,W104	1
060	807-002	SCREW,CAP HD SKT,M3X6 SST	2
061	663-057	GROMMET,ISLR,.245ID W/O FERR	3
062	801-003	WASHER,FLAT,M3 SST	15
064	212-1473-551	ASSY,PCB,FLUIDICS SUCTION	1
065	807-147	SCREW,CAP HD SKT,M2.5X5 SST	4
066	801-025	WASHER,FLAT,M2.5 SST	4
067	212-2294-001	CABLE ASSY,SMC/CASS REL,W95	1
069	212-2555-001	TUBING,HOSPITAL,FORMED .375OD	1
070	212-2742-001	BRACKET,FAN	1
071	212-2937-001	CABLE ASSY,FAN,W160 & W84	2
072	809-103	SCREW,BTN HD SKT,M4X6 SST	2
073	807-009	SCREW,CAP HD SKT,M3X30 SST	8
074	212-2542-001	COVER,HOUSING,FLUIDICS	1
075	796-013	WASHER,FLAT,NO.10 SST	1
077	674-182	FASTENER,BALL STUD,ZINC PLATE	4
078	212-2759-001	FERRULE,M4,THREADED	3
079	212-2736-001	COVER,RETENTION,WIRE	1
080	212-2935-001	SHIELD,EMI,RJ45 FLUIDICS	1
084	809-001	SCREW,BTN HD SKT,M3X6 SST	2
085	893-630	FITTING,CLAMP,TUBE .281 ID BRS	2
086	212-2284-001	CABLE ASSY,POS SENS PINCH,W105	1
087	212-2643-001	SPACER,SENSOR,POSITION	8
088	828-002	SCREW,CAP,BTN HD M3X0.5X10 CTN	4
089	026-059	CLAMP,CABLE,.187 DIA NYLON	3
090	603-035	BUSHING,SNAP,.26IDX.45ODX.26L	1
091	796-144	WASHER,FLAT,.381X.495X.035 SST	1
092	774-178	O-RING,.239IDX.379OD,VITON	5

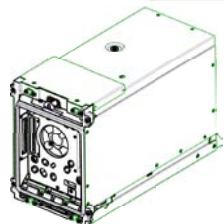
ITEM #	PART NUMBER	DESCRIPTION	QTY
093	827-002	SCREW,CAP HD,M2X0.4X8 SST W/CT	2
094	827-012	SCREW,CAP HD,M3X.5X8 SST W/CT	3
095	892-042	ADHESIVE,THREADLOCKER,242 BLUE	AR
096	212-3477-001	FRAME ASSY,REC MECH	1
AR = As Required			

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3.  BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. * XX IN-LBS * - INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE +/- 10% OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
5. BUILD PER 992-2120-001 AND TEST PER 907-2120-047.

TABULATION

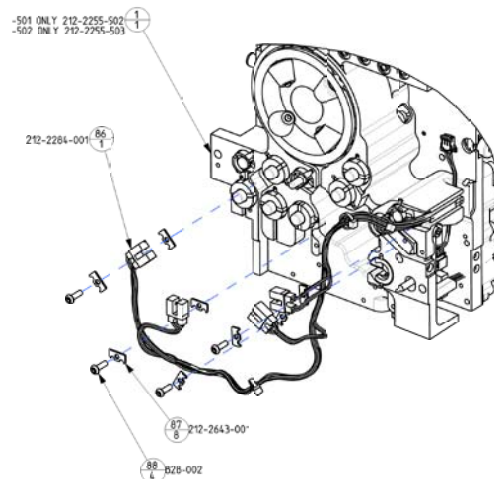
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212-3245-501	ASSY,FLUIDICS	212-3245-501FS	V	ASSY,FLUIDICS,FIELD SERVICE
212-3245-502	ASSY,FLUIDICS	212-3245-502FS	V	ASSY,FLUIDICS,FIELD SERVICE



SEE SEPARATE PARTS LIST

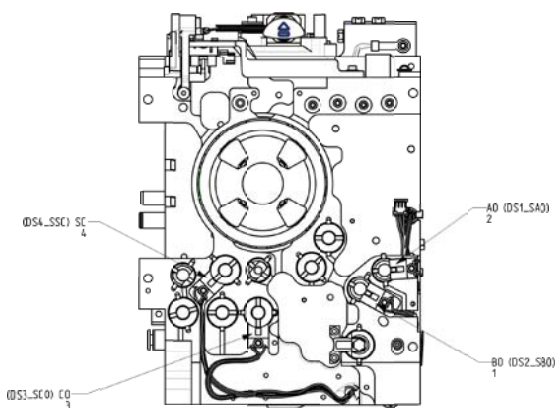
QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY J.ATHERLEY	DATE 05/21/09	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE DISCLOSED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF ALCON.		
DESIGNED BY R.PALIND	DATE 05/21/09	Alcon		
APPROVED BY M.STAUDER	DATE 05/21/09	DESCRIPTION ASSY,FLUIDICS		
FORMIT REVISION	2/23/2007	SIZE B	DRAWING NUMBER 212-3245-XXX	REV V
POMLINK MODEL ATTRIBUTES	NAME: 212-3245-XXX	SCALE: 3/4	SHEET 1 OF 41	VERSION: V.5

REV	ECN	DATE
P3	NOT RELEASED	08/12/09
A	20091409	08/18/09
B	20091930	10/21/09
C	20092122	11/24/09
D	20100156	22/11/10
E	20100901	26/14/10
F	20101341	08/24/10
G	20101904	11/11/10
H	CN016196ECN	26/09/11
J	CN027000ECN	02/24/12
K	CN031544ECN	26/13/12
L	CN031792ECN	06/26/12
M	CN038737ECN	22/11/13
N	CN042229ECN	26/17/13
R	CN046058ECN	07/23/13
T	CN048020ECN	19/19/13
U	CN053328ECN	03/05/14
V	CN054259ECN	24/11/14



STEP 1

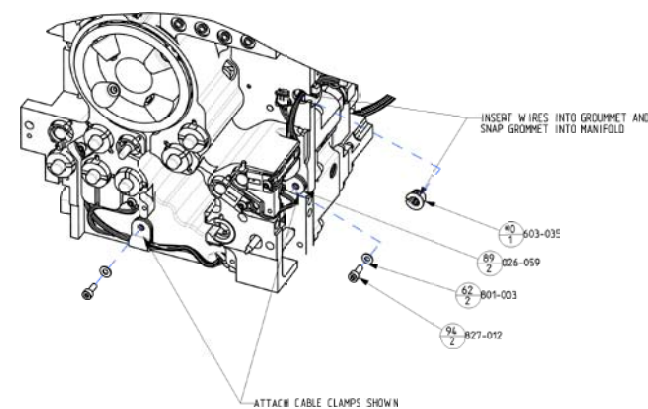
SIZE B	DRAWING NUMBER 212-3245-XXX	REV V
SCALE: 3/4	SHEET 2 OF 41	



STEP 2

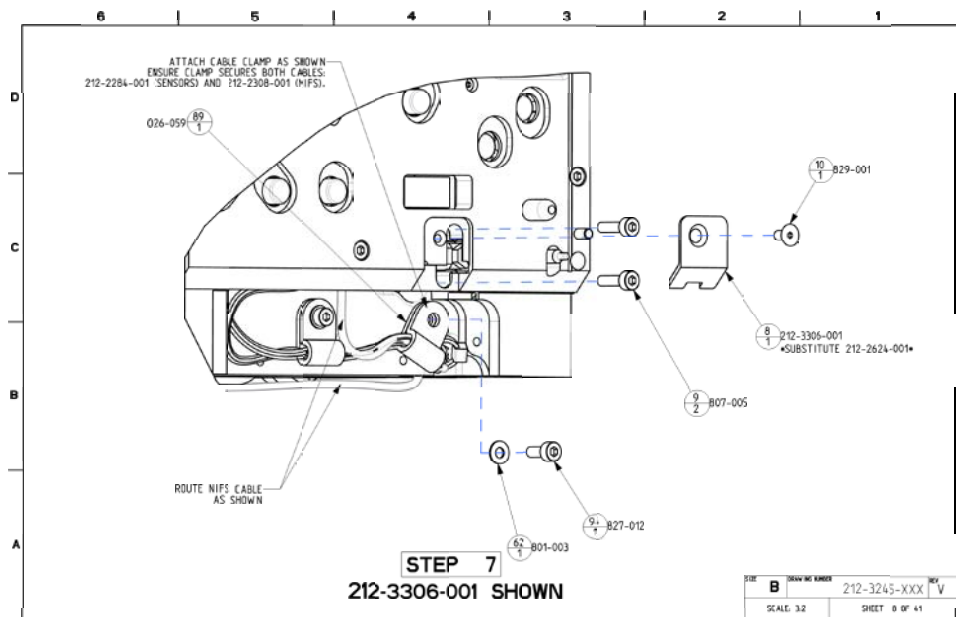
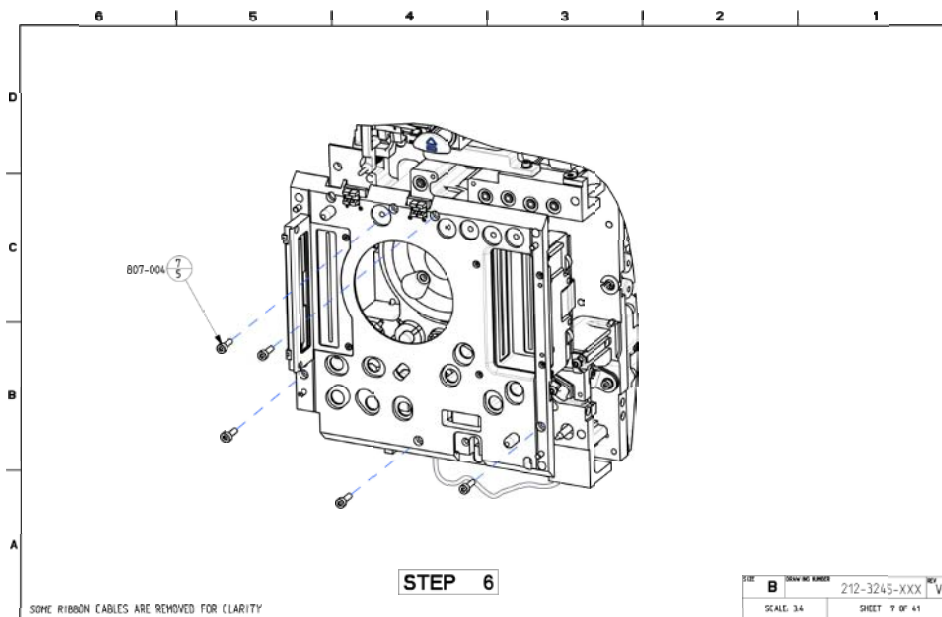
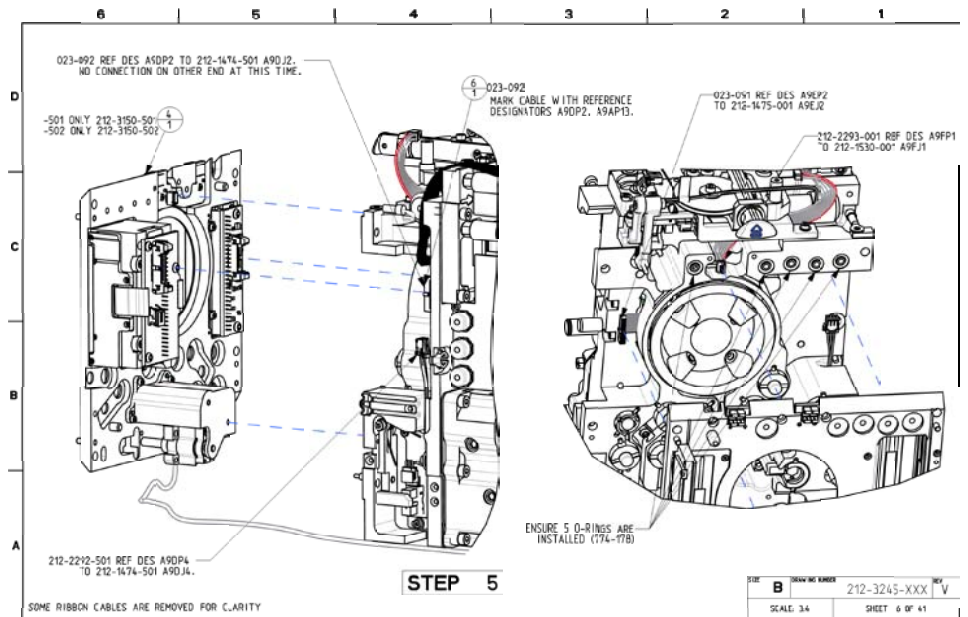
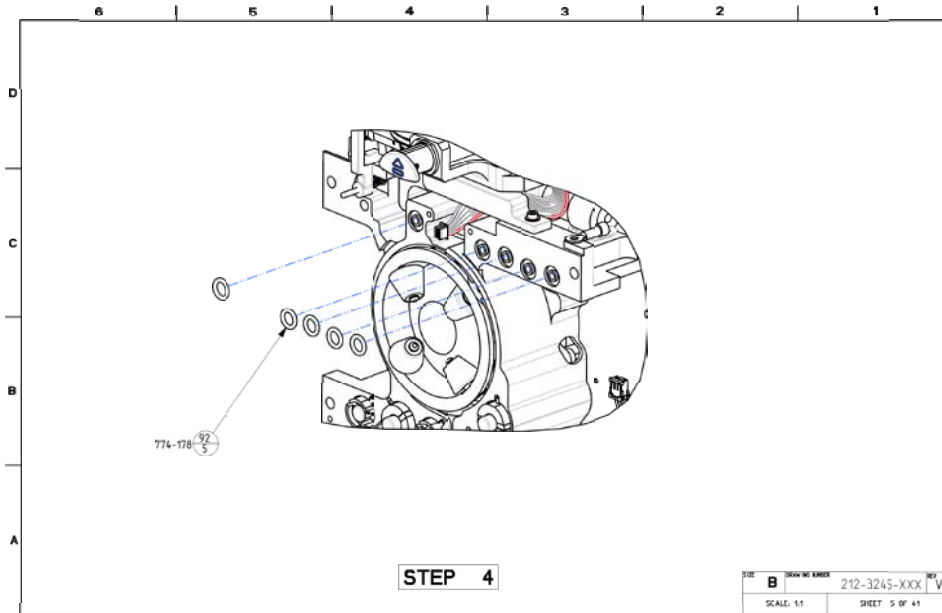
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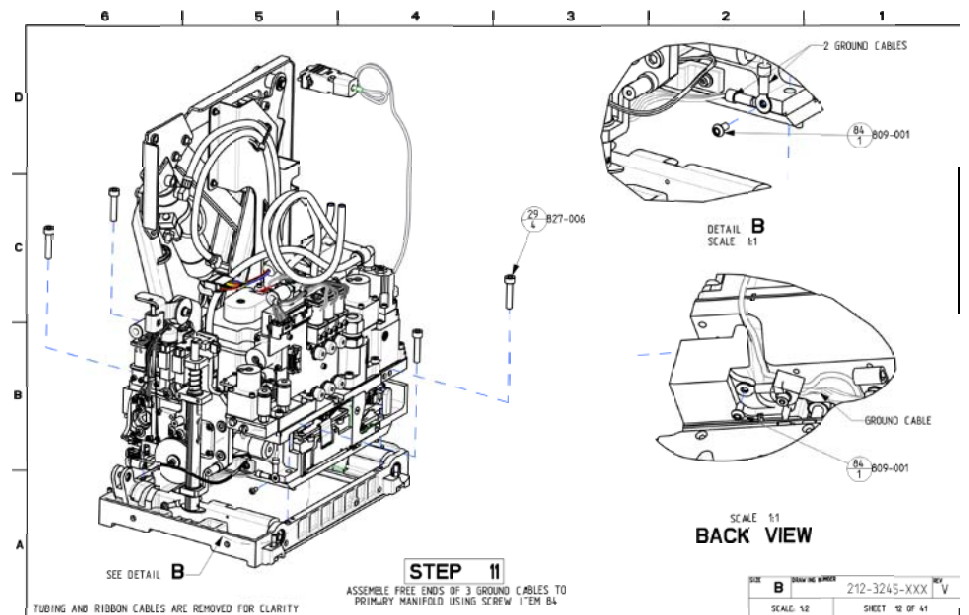
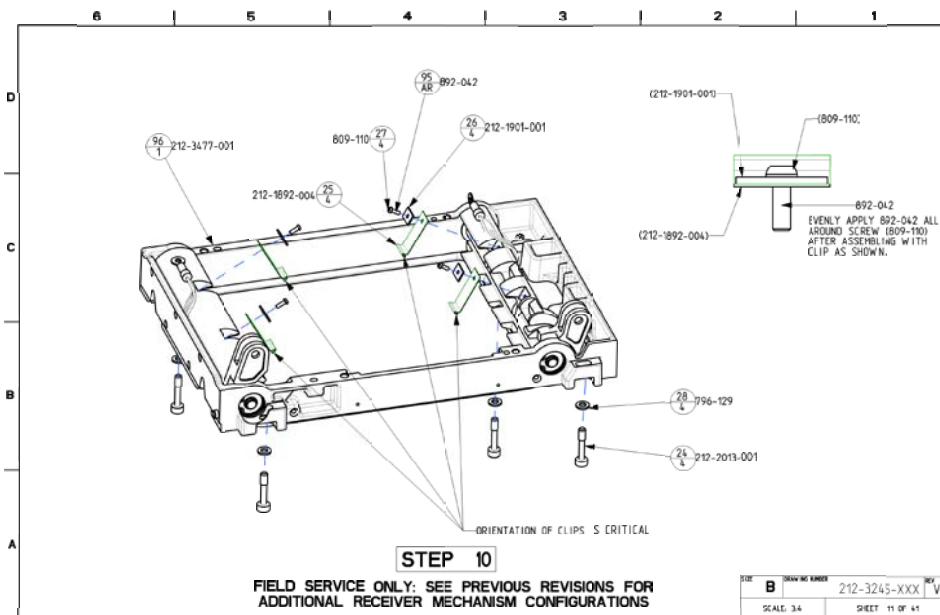
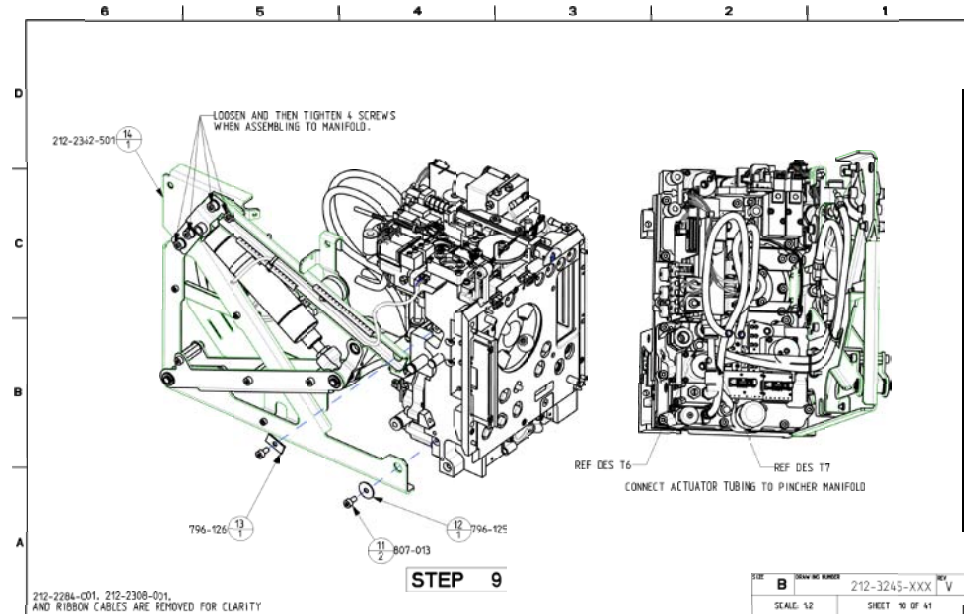
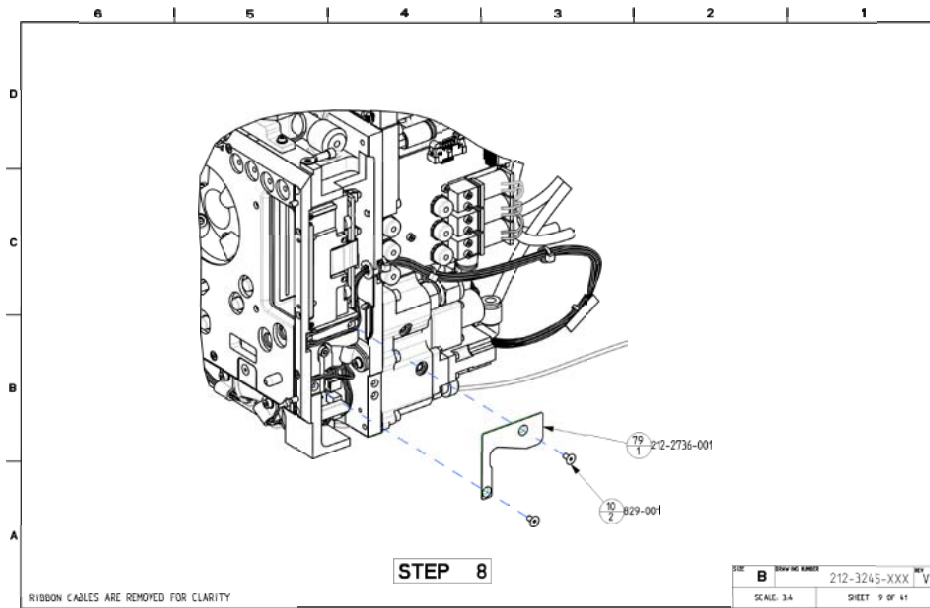
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SCALE: 3/4	SHEET 3 OF 41	

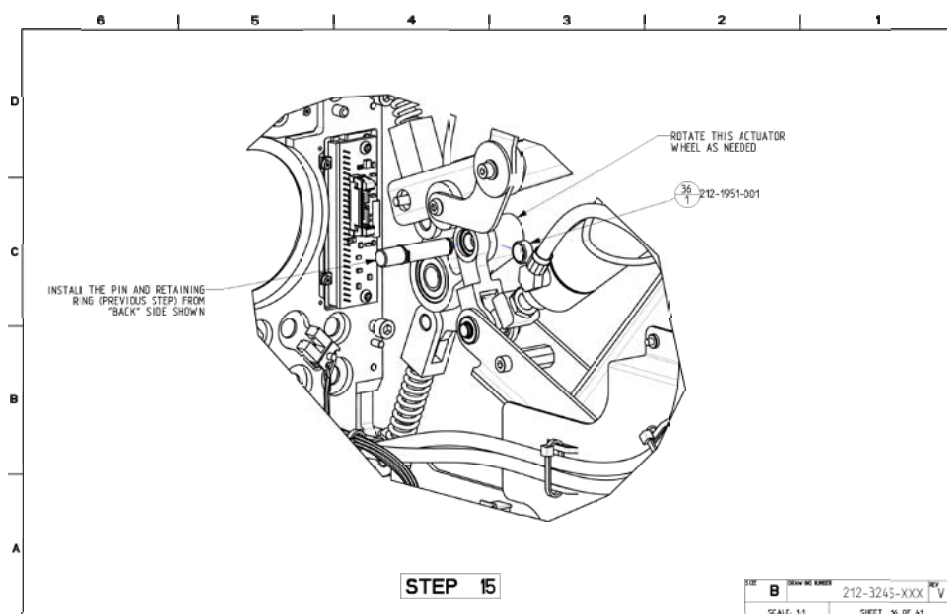
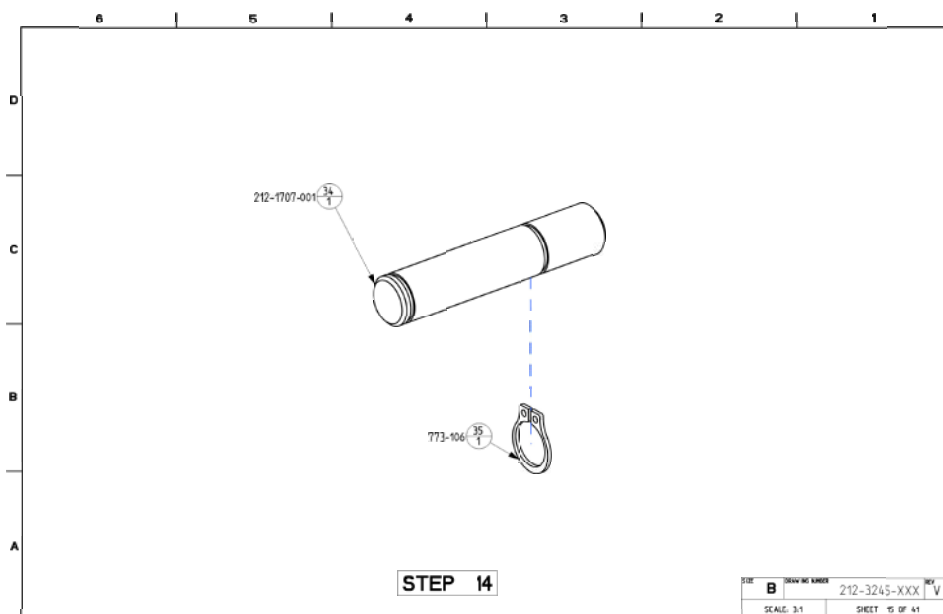
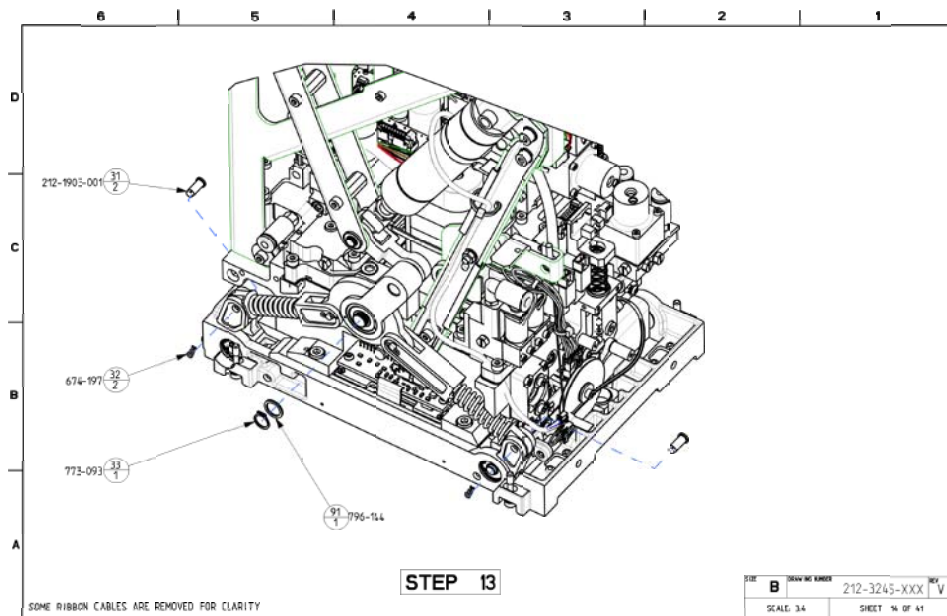
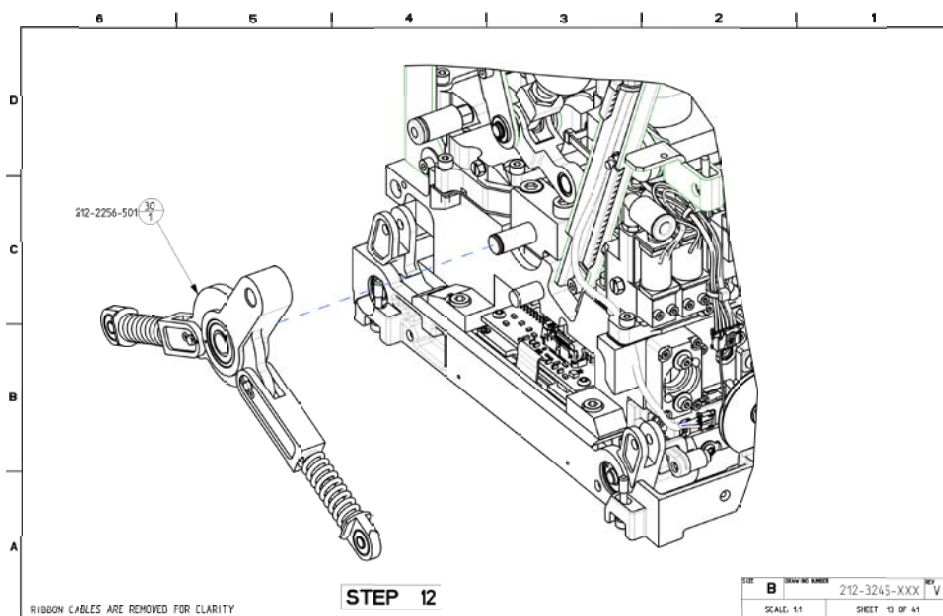


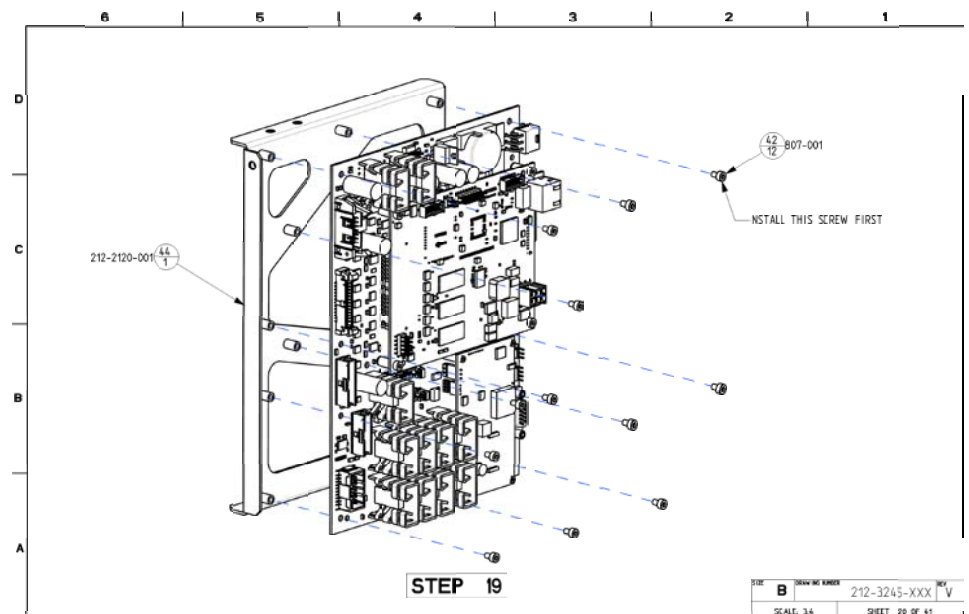
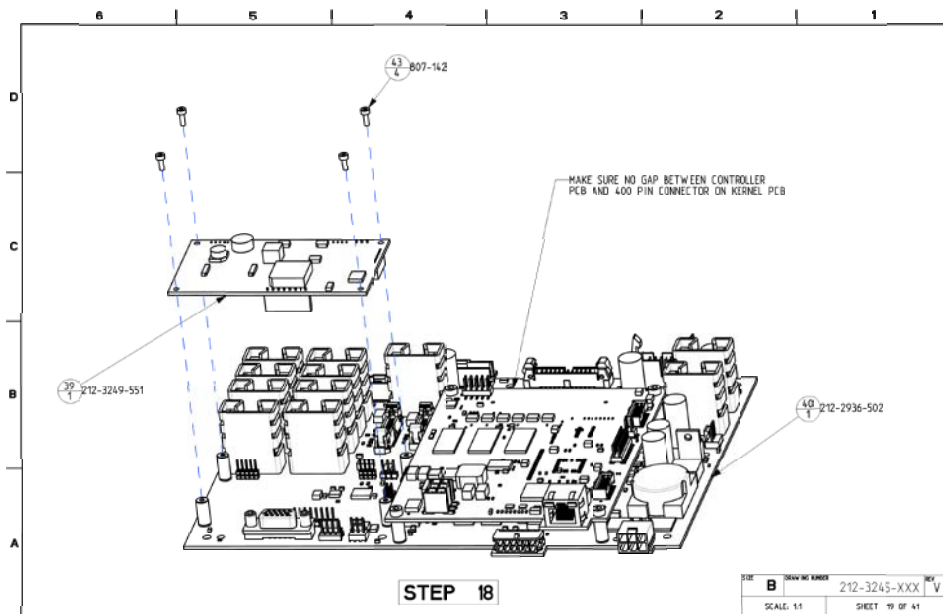
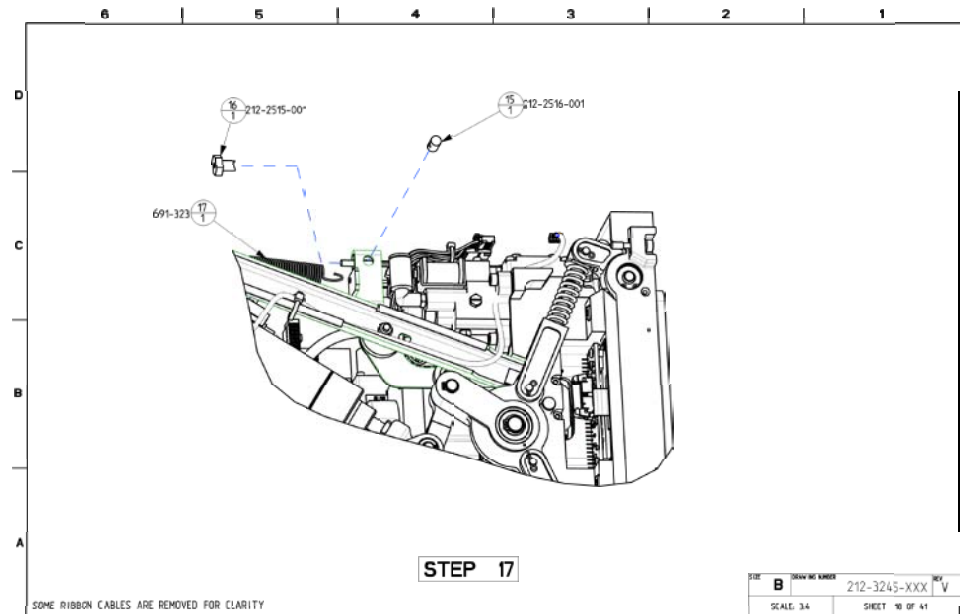
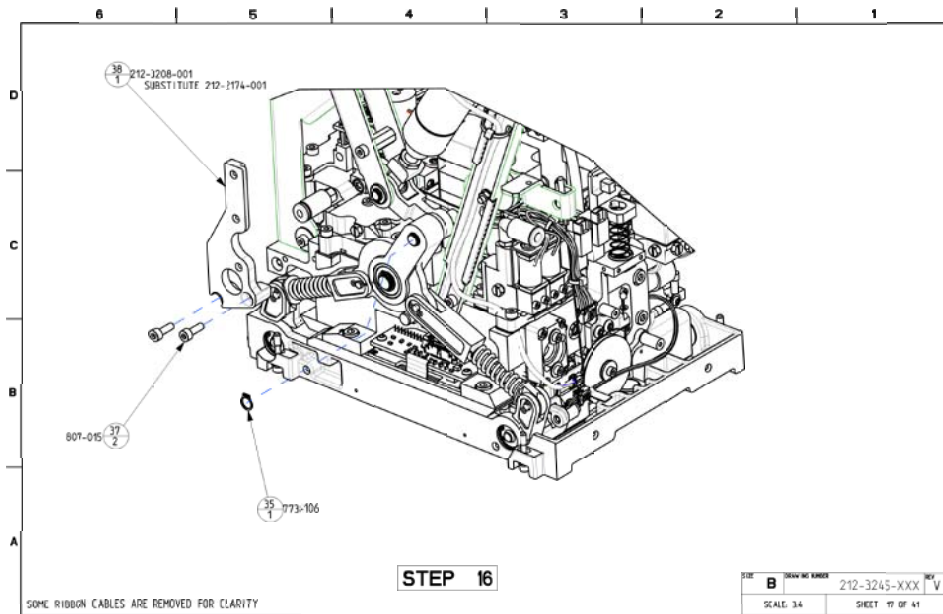
STEP 3

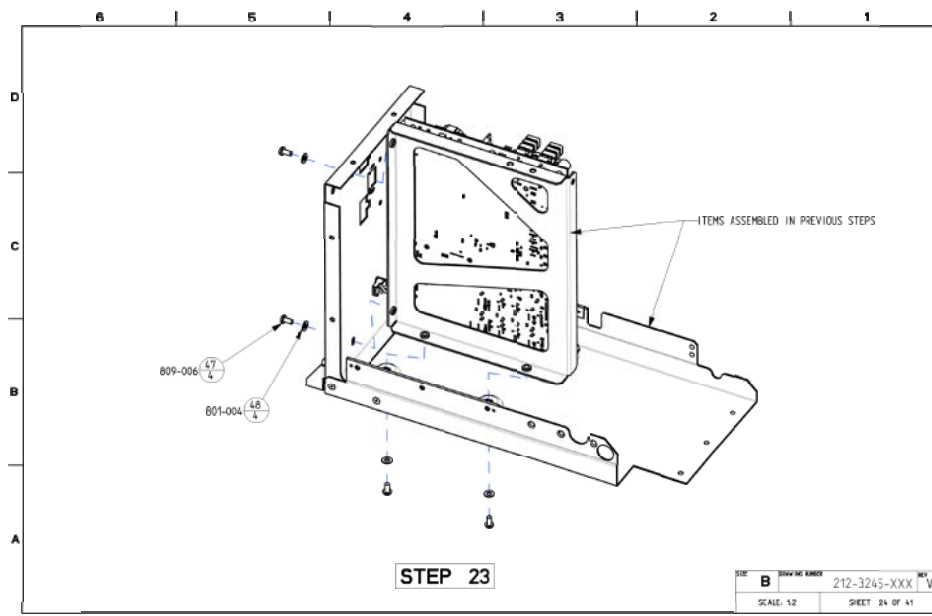
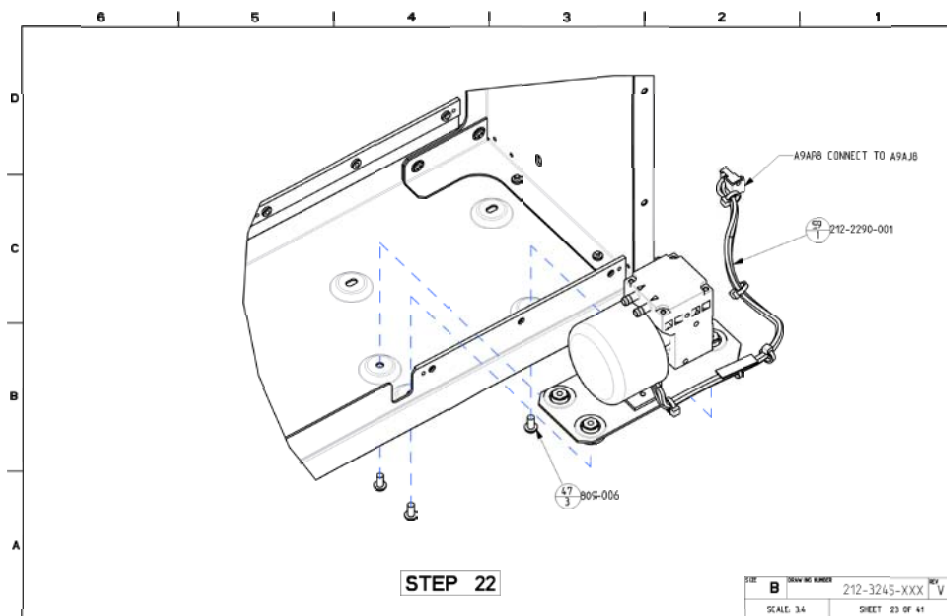
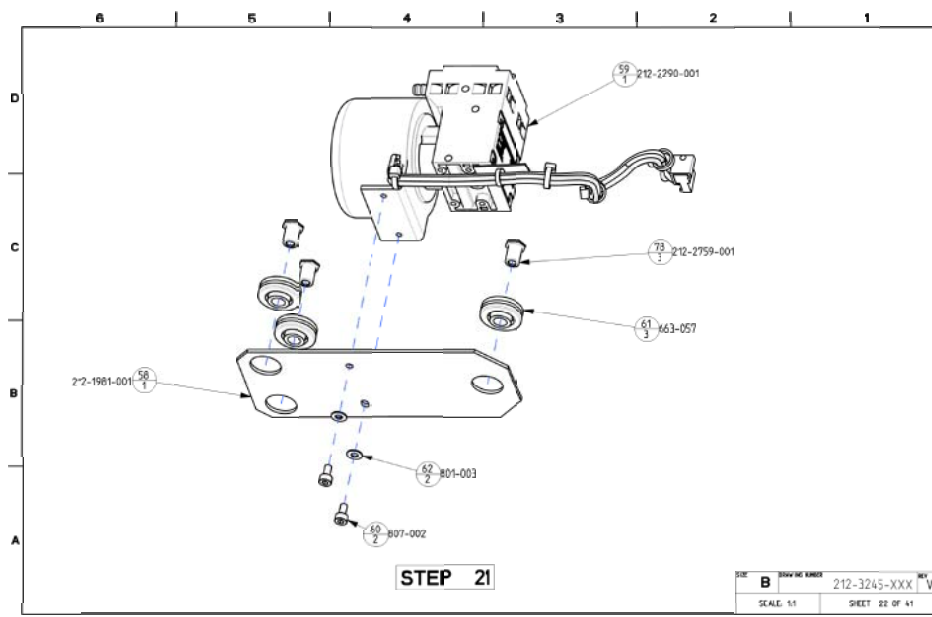
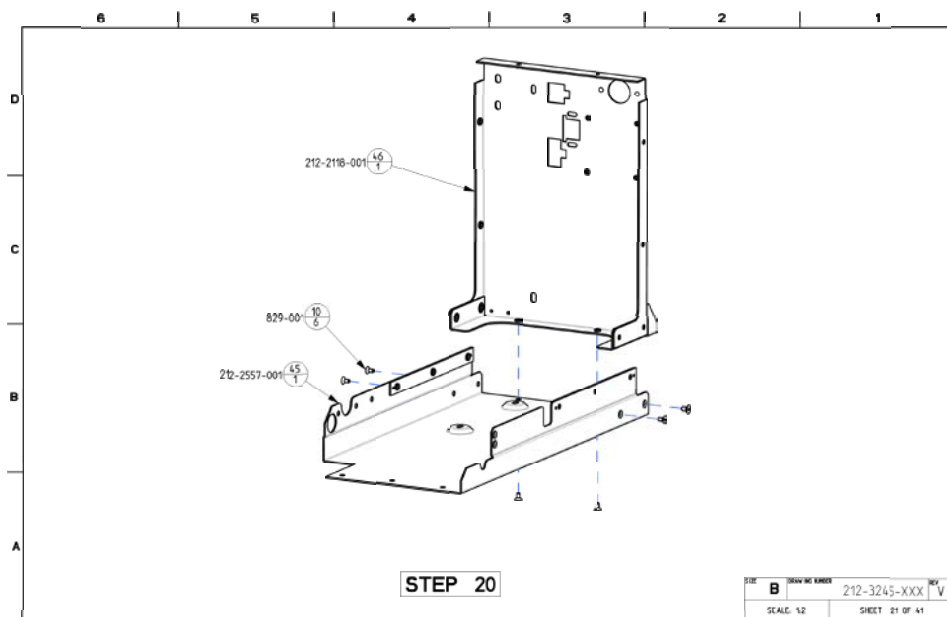
SIZE B	DRAWING NUMBER 212-3245-XXX	REV V
SCALE: 3/4	SHEET 4 OF 41	

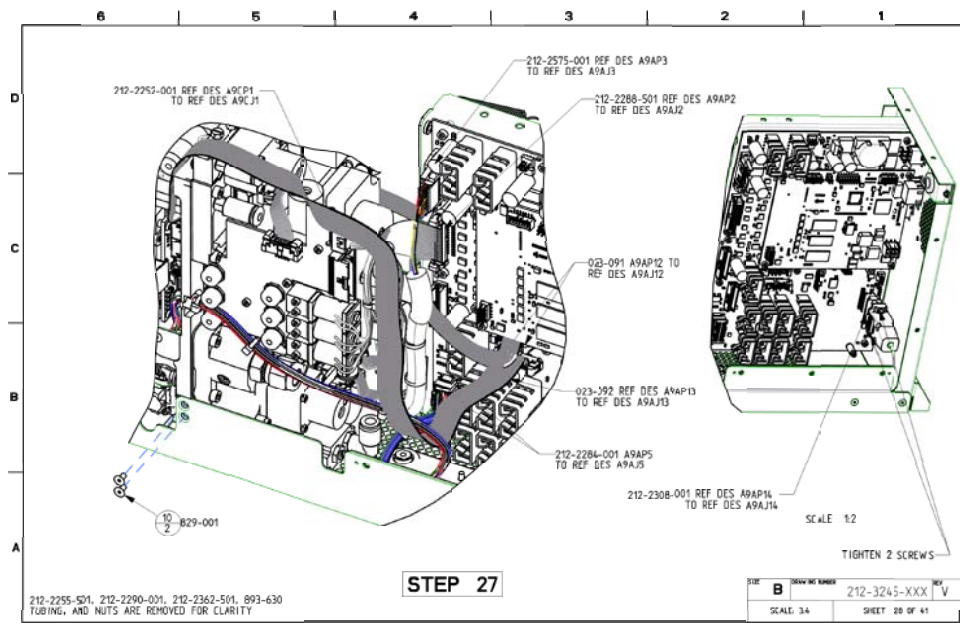
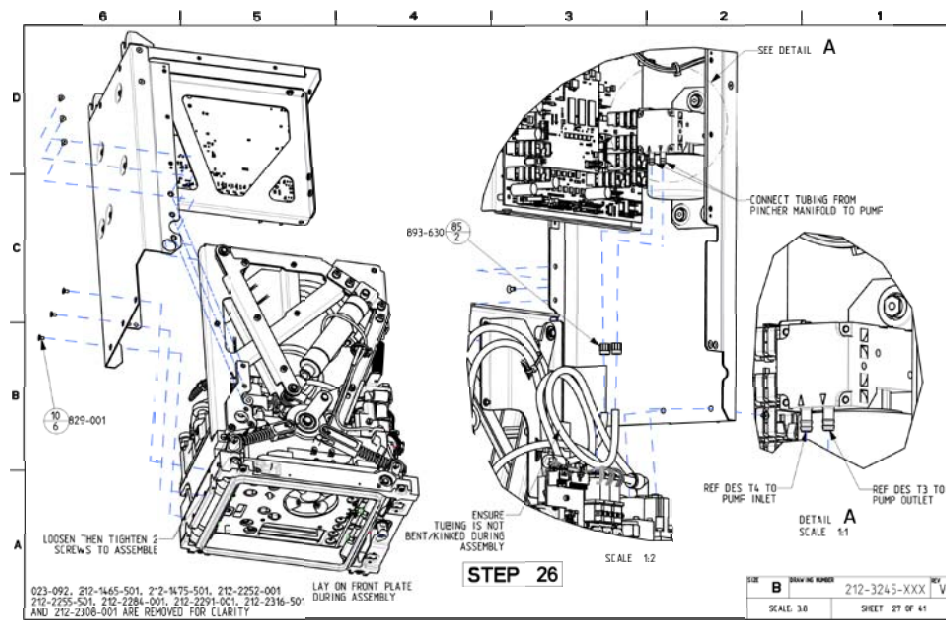
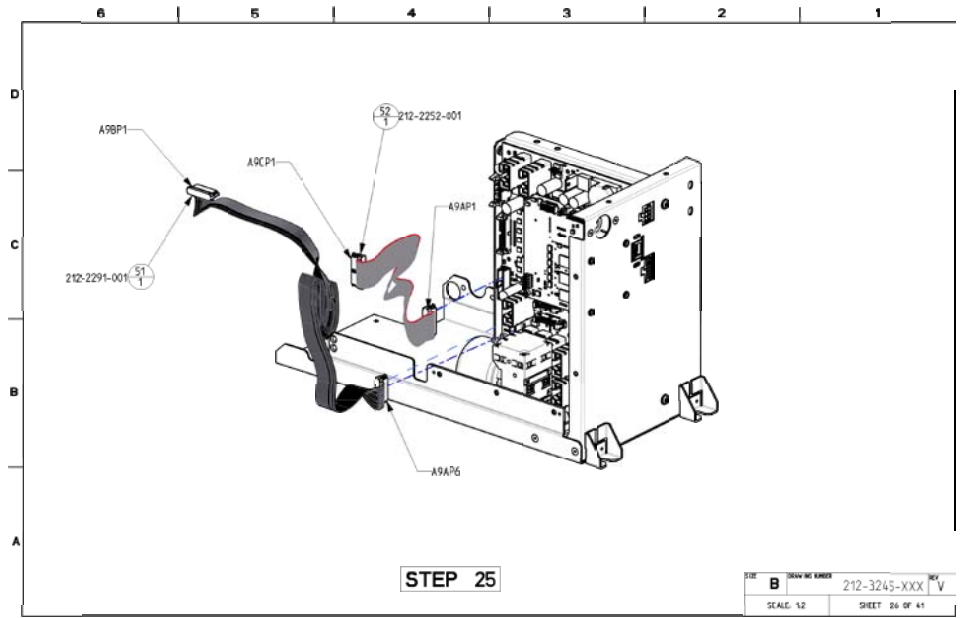
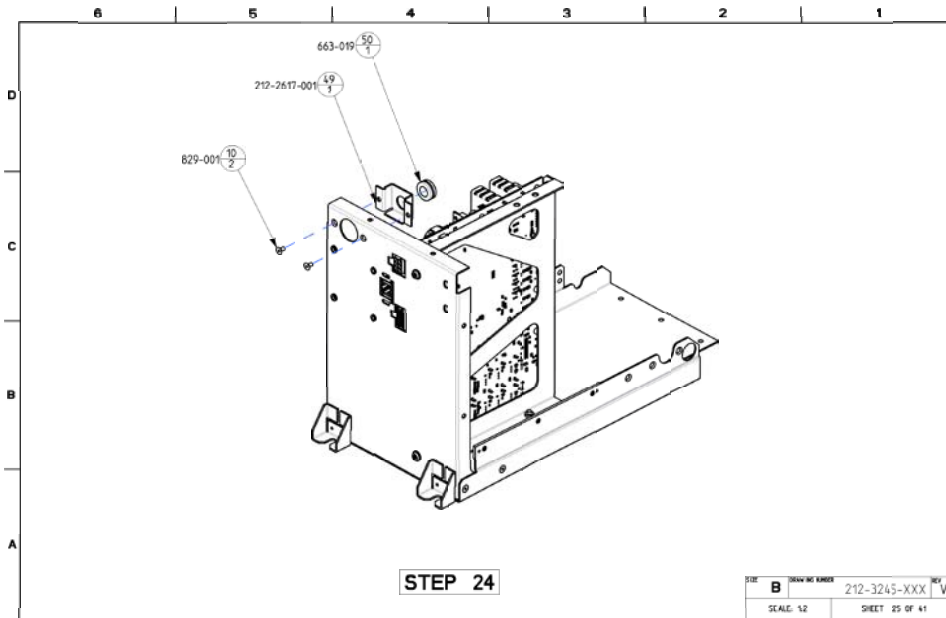


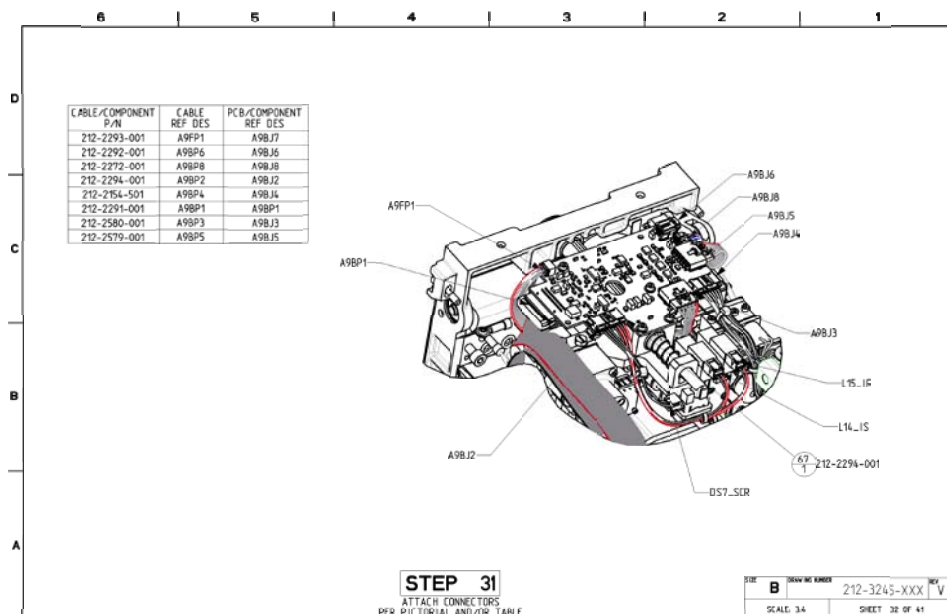
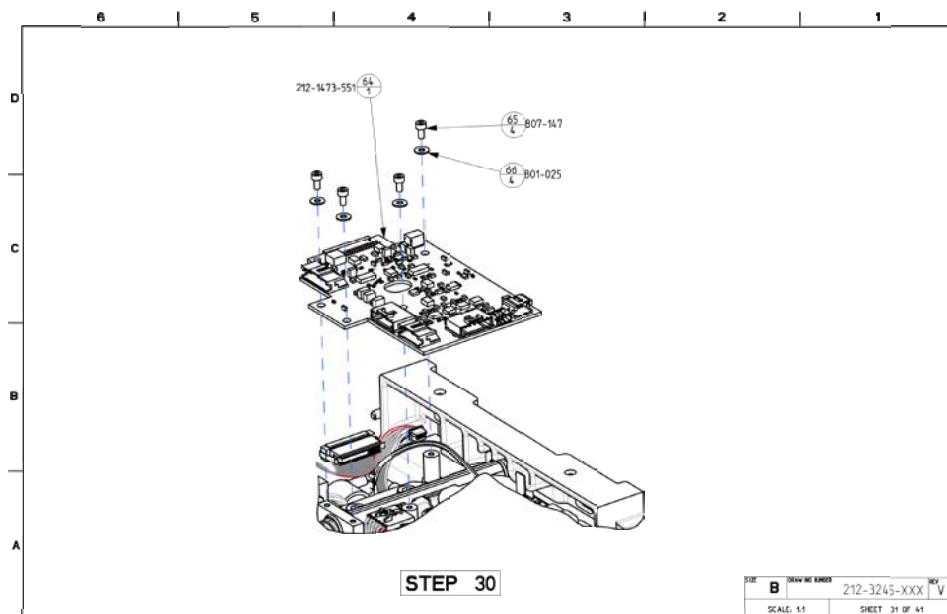
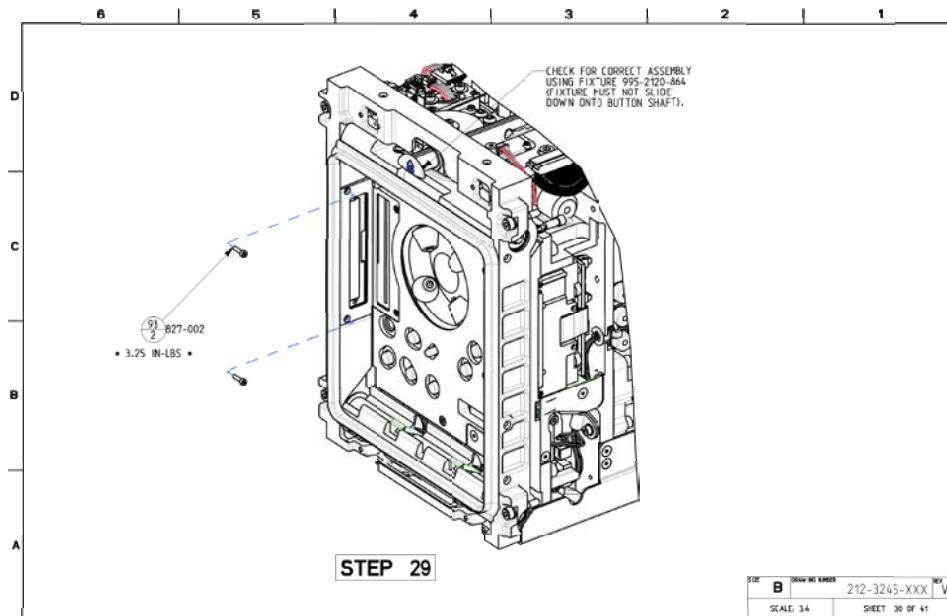
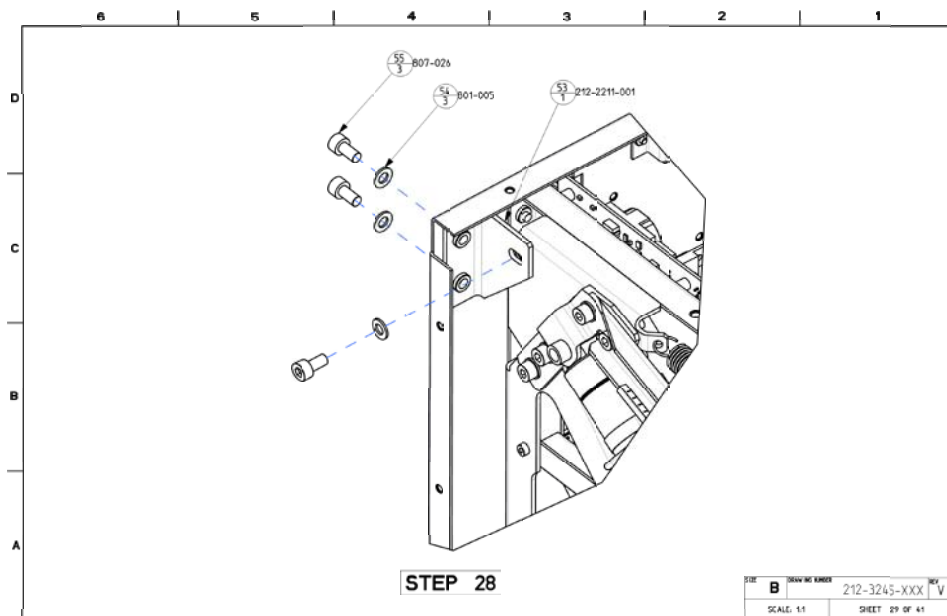


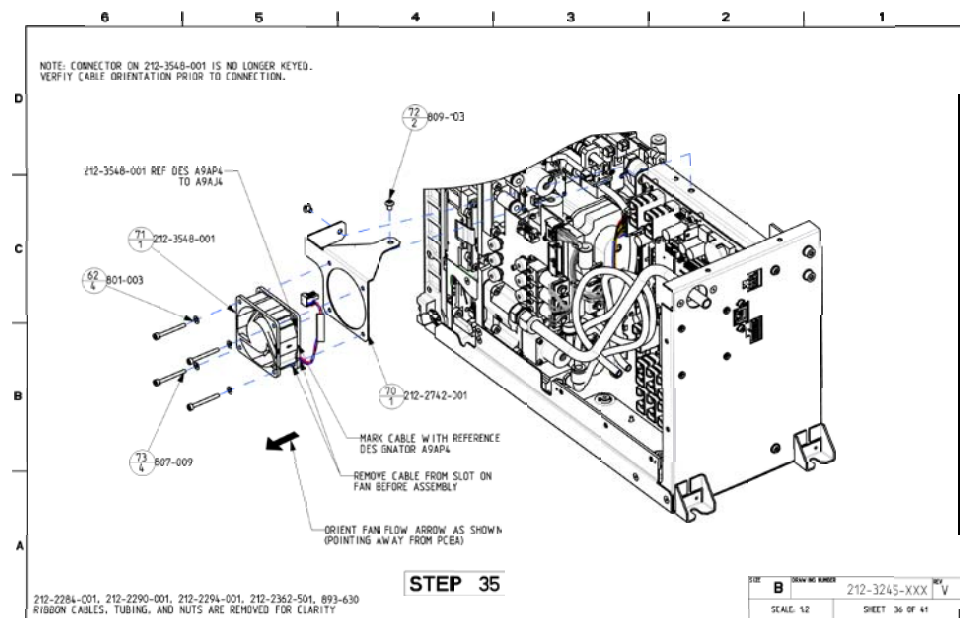
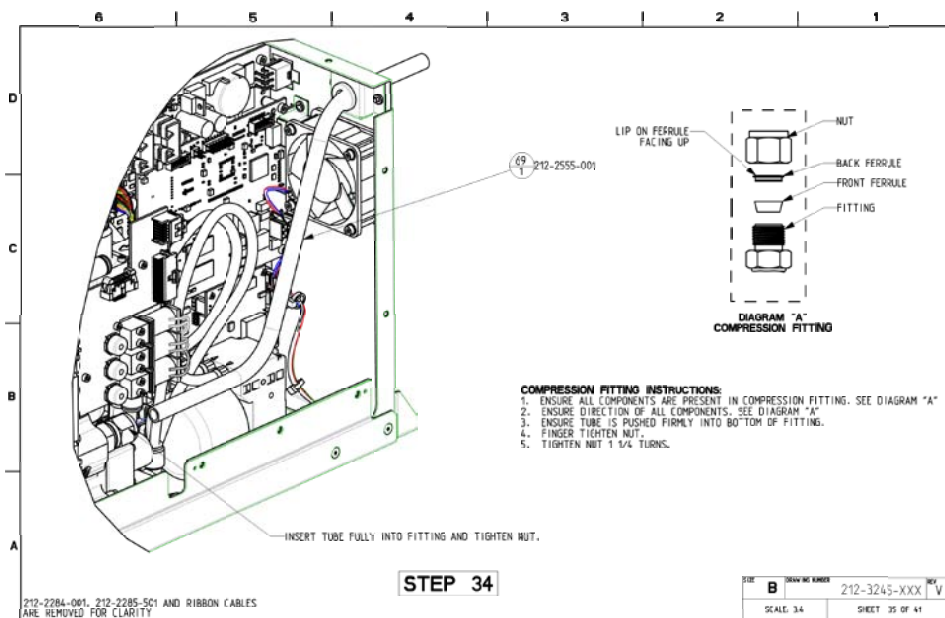
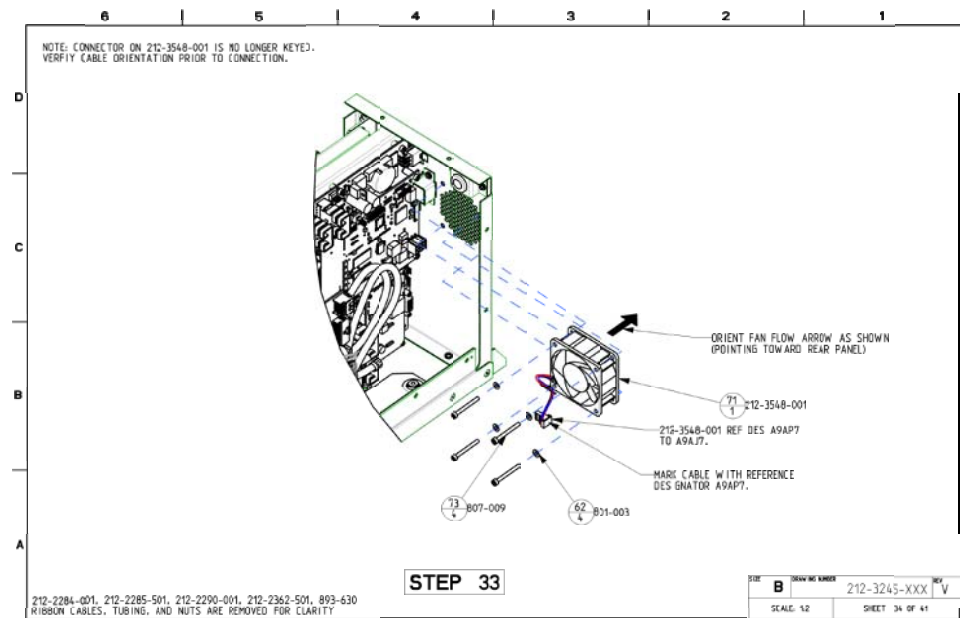
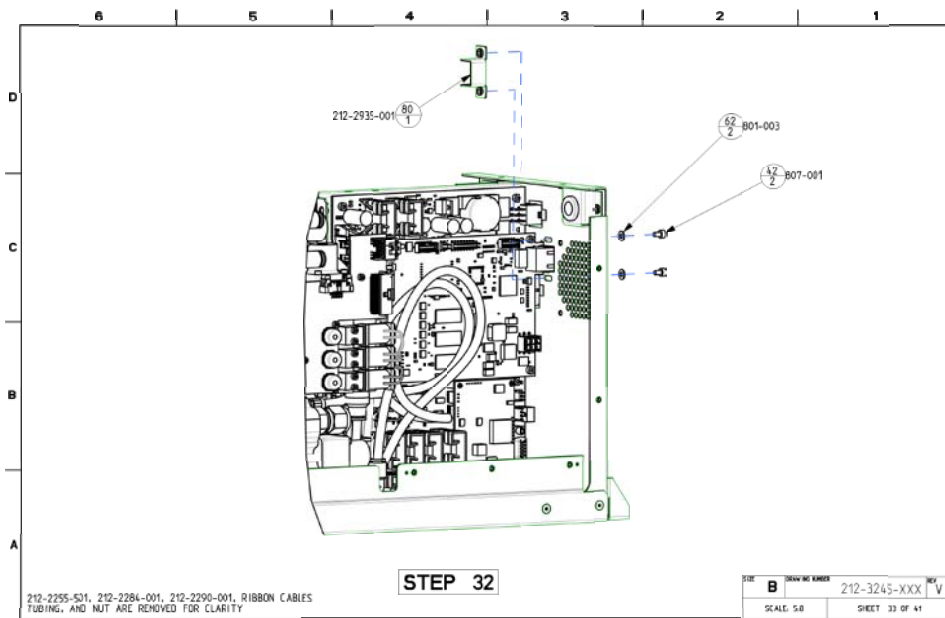


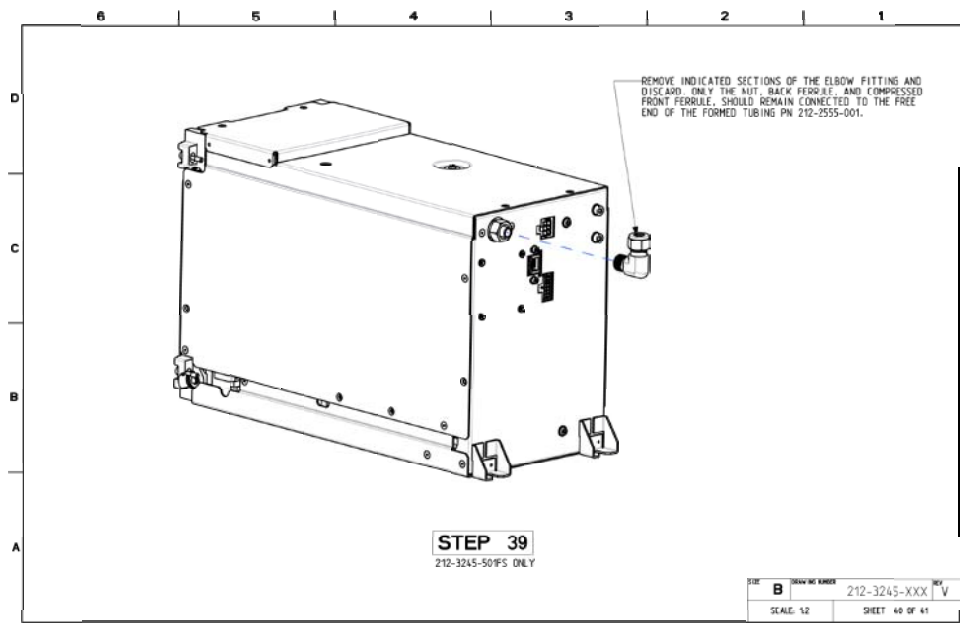
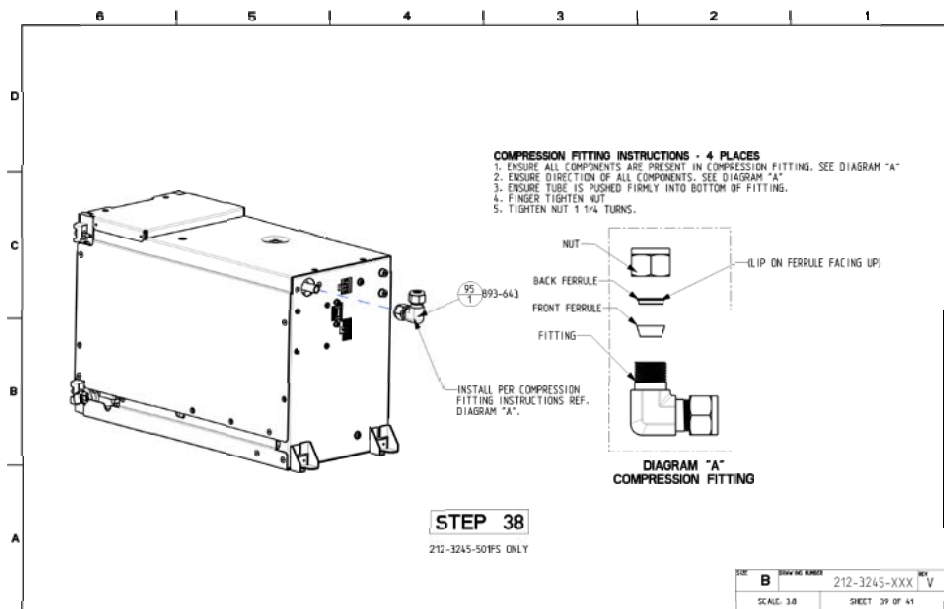
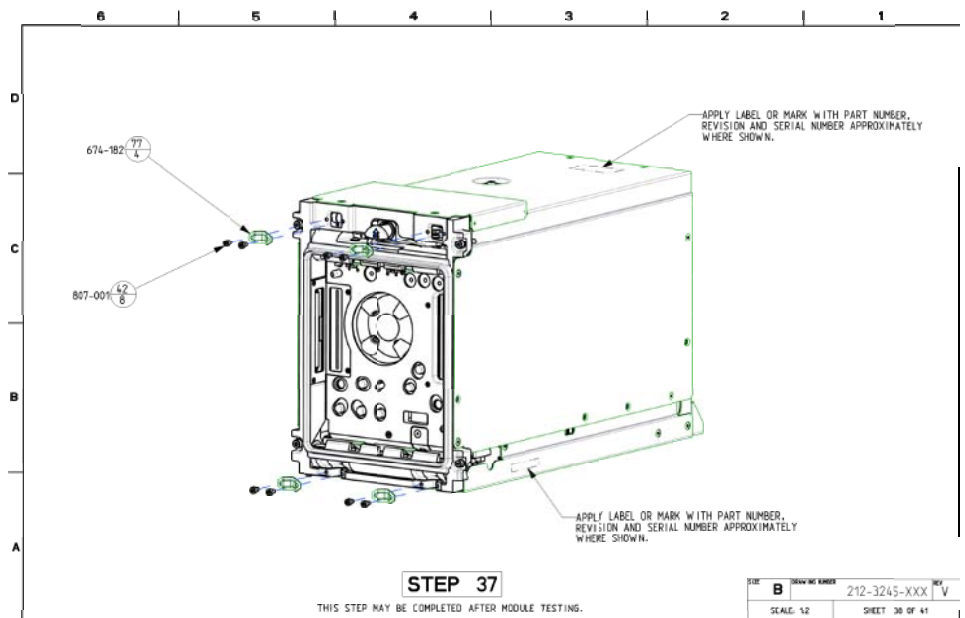
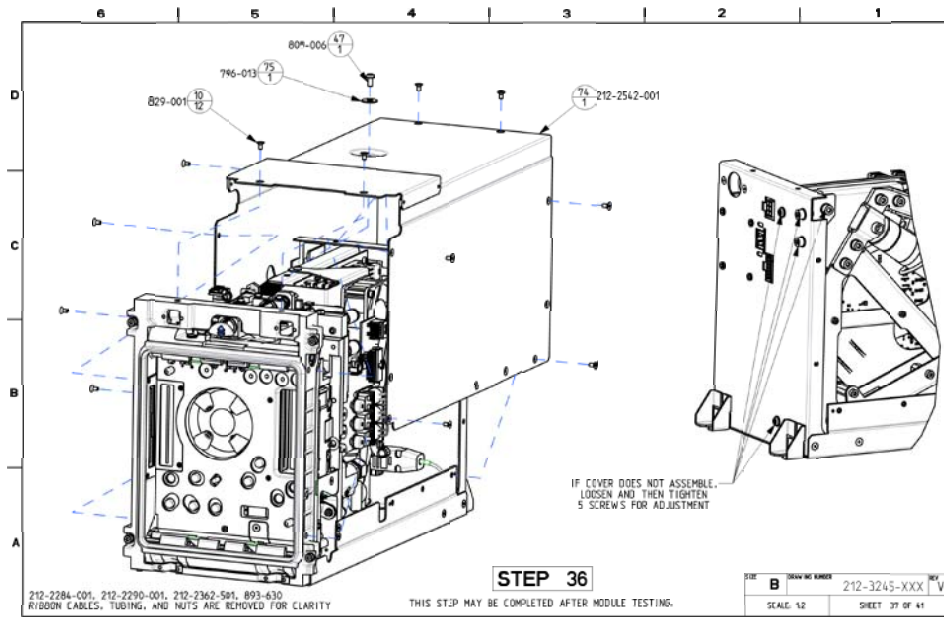


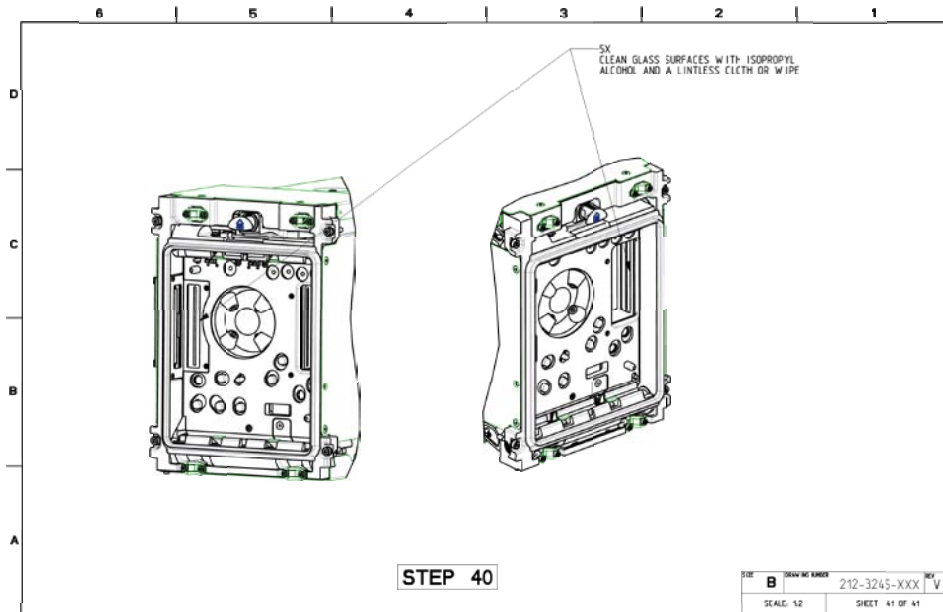










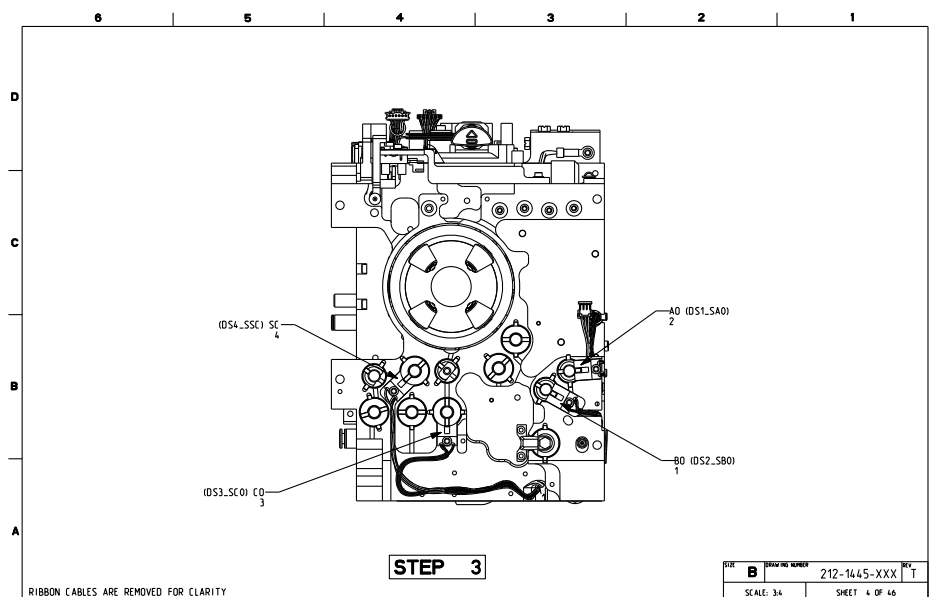


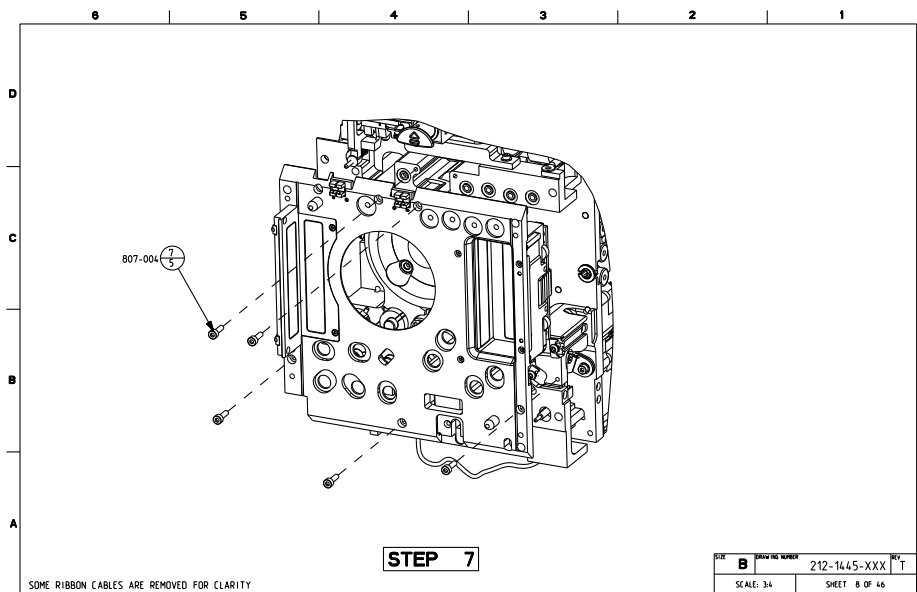
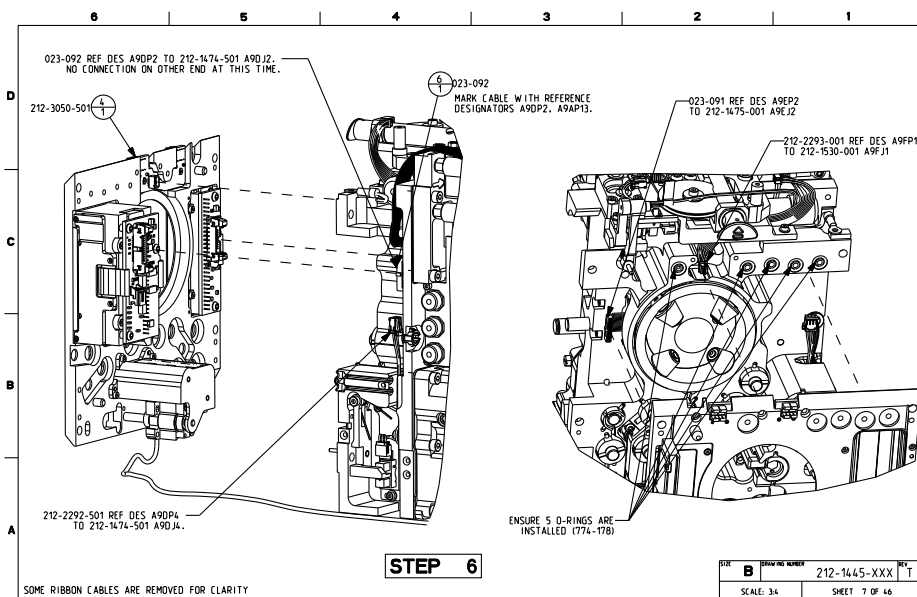
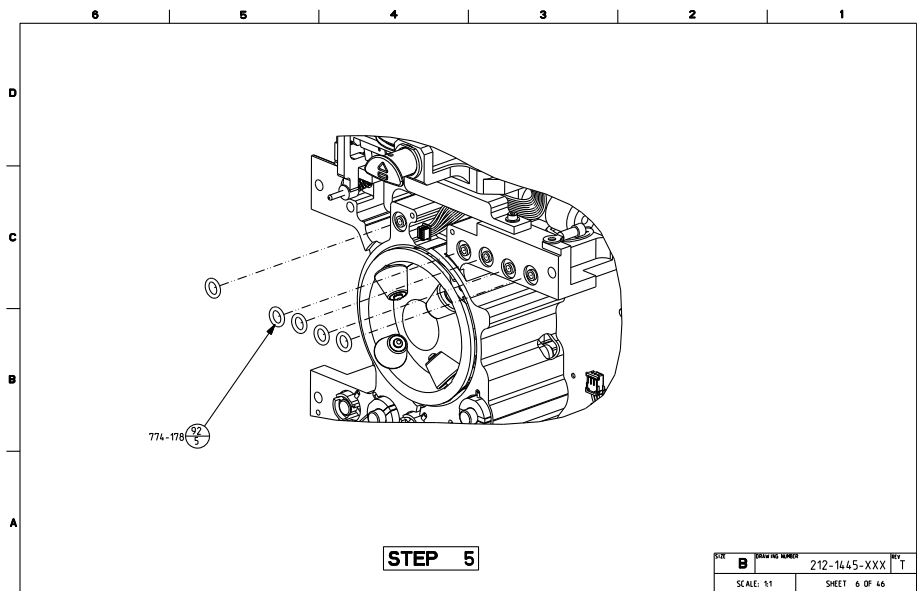
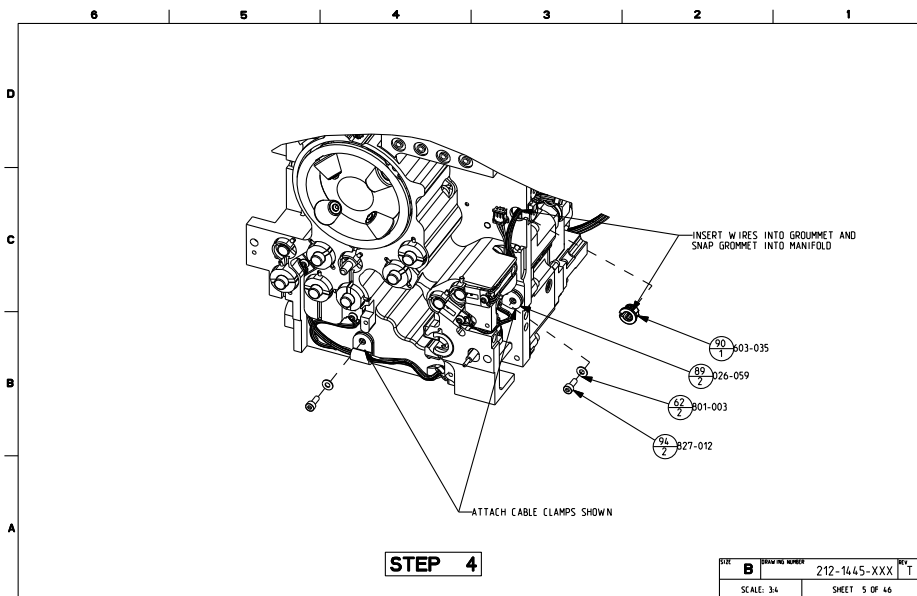
212-1445-501 ASSY, FLUIDICS

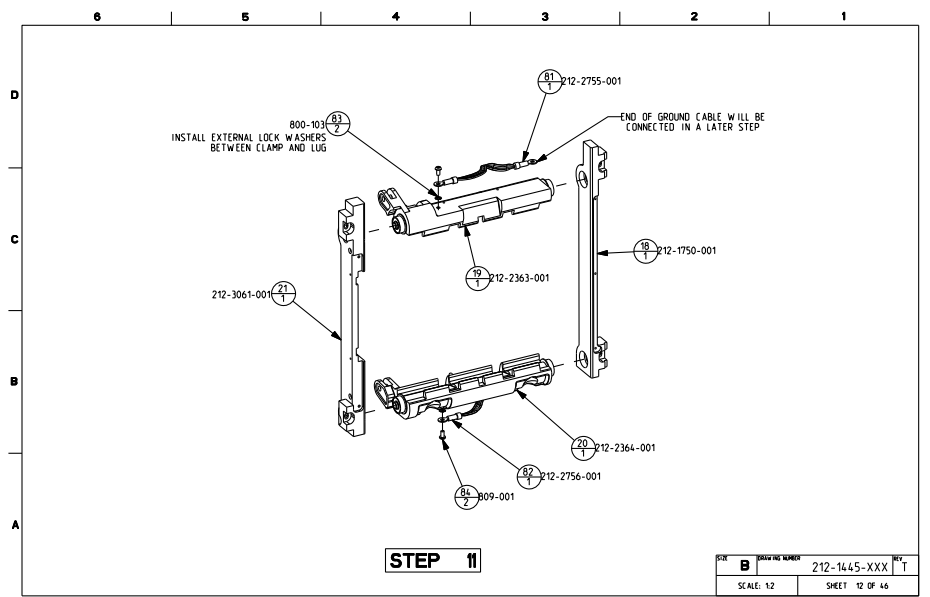
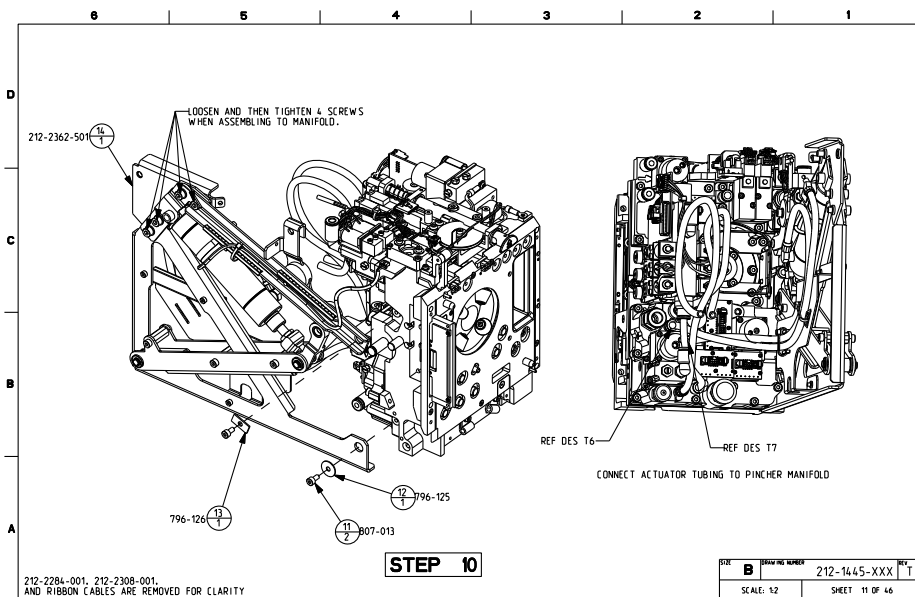
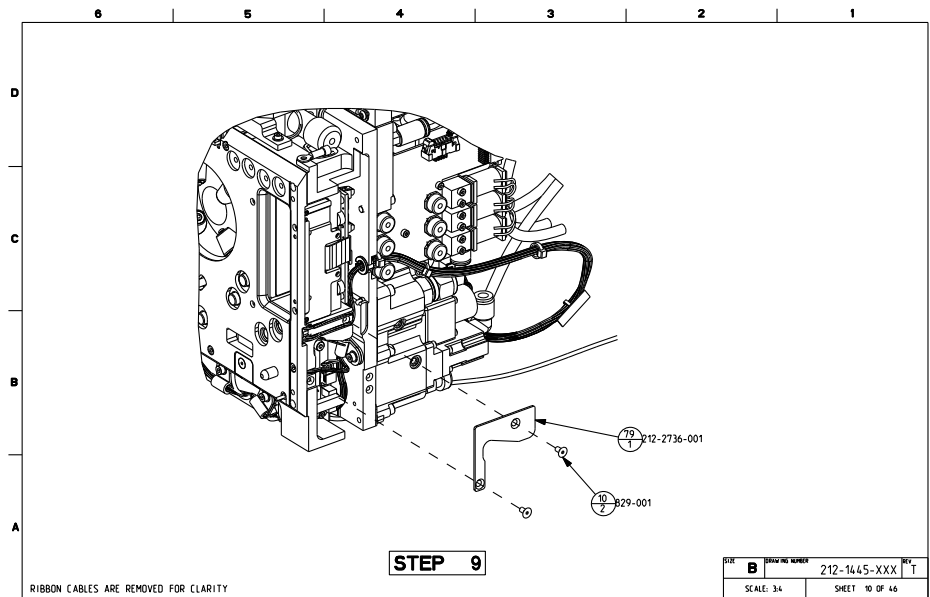
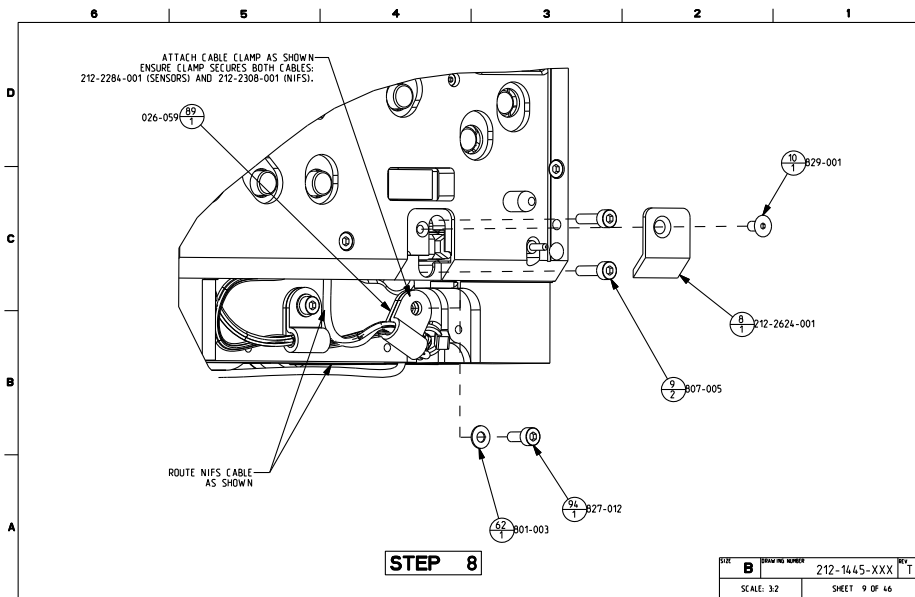
ITEM #	PART NUMBER	DESCRIPTION	QTY
0	212-3061-001	GUIDE,CASSETTE,ASP	1
1	212-2255-501	ASSY,MANIFOLD,PRIMARY	1
2	807-140	SCREW,CAP HD SKT,M2.0X4 SST	1
3	691-317	SPRING,CPRSN,.203ODX.63 MW	1
4	212-3050-501	ASSY,FACEPLATE	1
6	023-092	CABLE,RIBBON,26 COND 20 INCH	1
7	807-004	SCREW,CAP HD SKT,M3X10 SST	13
8	212-2624-001	COVER,ACCESS,NIFS	1
9	807-005	SCREW,CAP HD SKT,M3X12 SST	2
10	829-001	SCREW,FLT HD,M3X0.5X6 SST W/CT	31
11	807-013	SCREW,CAP HD SKT,M4X8 SST	2
12	796-125	WASHER,FLAT,.172X.625X.030 SST	1
13	796-126	WASHER,FLAT,RECT .375X.750 SST	1
14	212-2362-501	ASSY,ACTUATOR,MOUNTING	1
15	212-2516-001	BARREL,CABLE,RELEASE	1
16	212-2515-001	NUT,CABLE,RELEASE	1
17	691-323	SPRING,EXT,.50ODX2.0LX.037THK	1
18	212-1750-001	GUIDE,CASSETTE,INFUSION	1
19	212-2363-001	CLAMP,CASSETTE,UPPER	1
20	212-2364-001	CLAMP,CASSETTE,LOWER	1
22	212-2149-001	BRACKET,UPPER,CROSS MEMBER	1
23	212-2145-001	BRACKET ASSY,PANEL,LOWER FRONT	1
24	212-2013-001	SCREW,CAPTIVE,18-8 SST	4
25	212-1892-004	CLIP,CASSETTE,RETAINING 90DEG	4
26	212-1901-001	WASHER,CLAMP	4
27	809-110	SCREW,BTN HD SKT,M2X6 SST	4
28	796-129	WASHER,FLAT,.162X.308X.040 SST	4
29	827-006	SCREW,CAP HD,M5X.8X25 SST W/CT	4
30	212-2256-501	ASSY,WHEEL,ACTUATOR	1
31	212-1903-001	PIN,LINKAGE,CASSETTE CLAMP	2
32	674-197	PIN,COTTER,.125ID INTERNAL	2
33	773-093	RING,RETAINING,3/8 SHAFT SST	1
34	212-1707-001	SHAFT,TRANSFER	1
35	773-106	RING,RETAINING,.312 SHAFT SST	2
36	212-1951-001	SPACER,LINK,TRANSFER	1
37	807-015	SCREW,CAP HD SKT,M4X12 SST	2

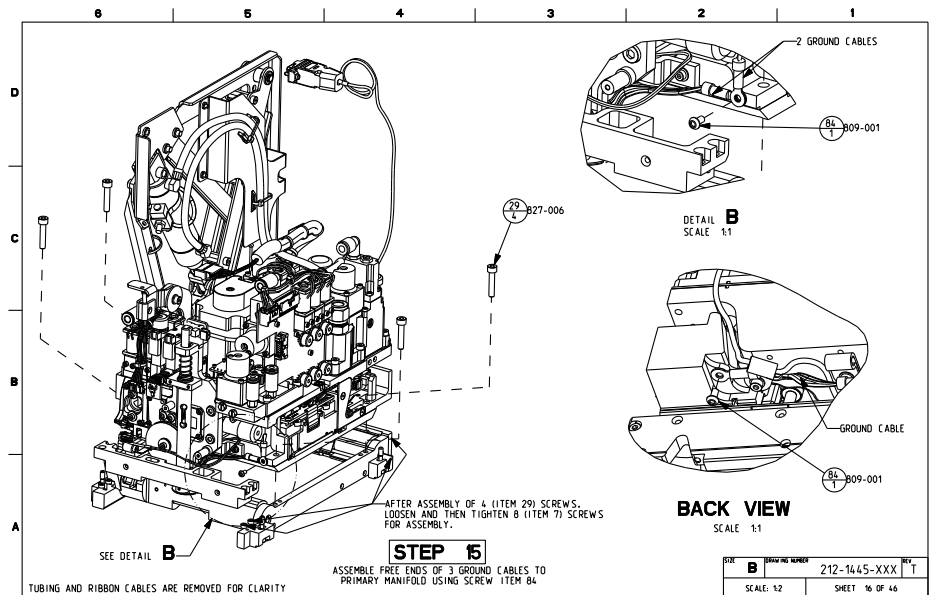
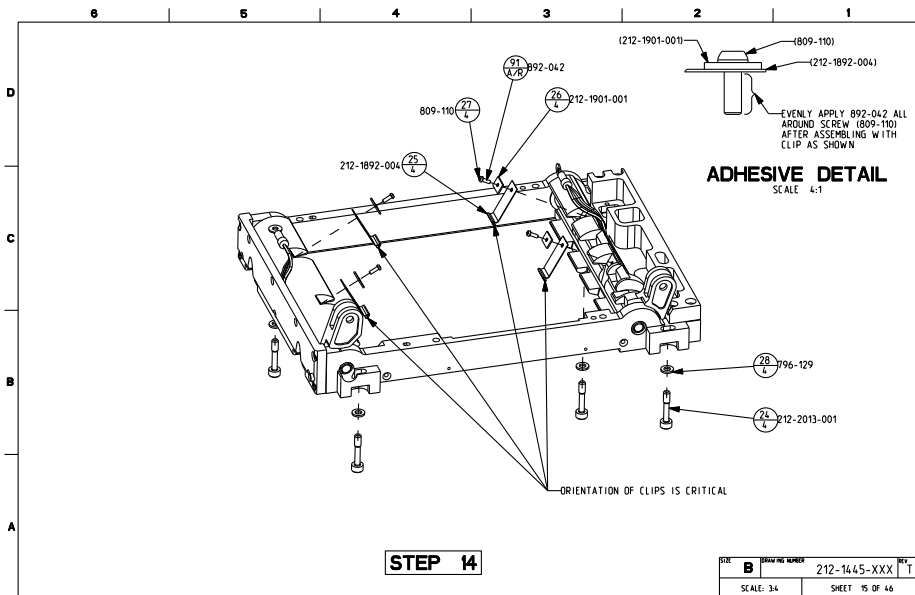
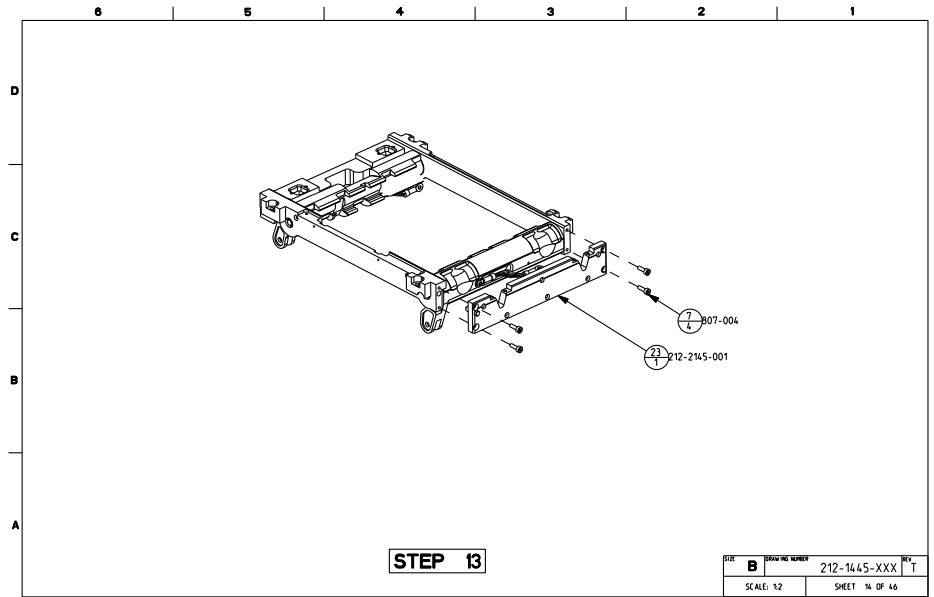
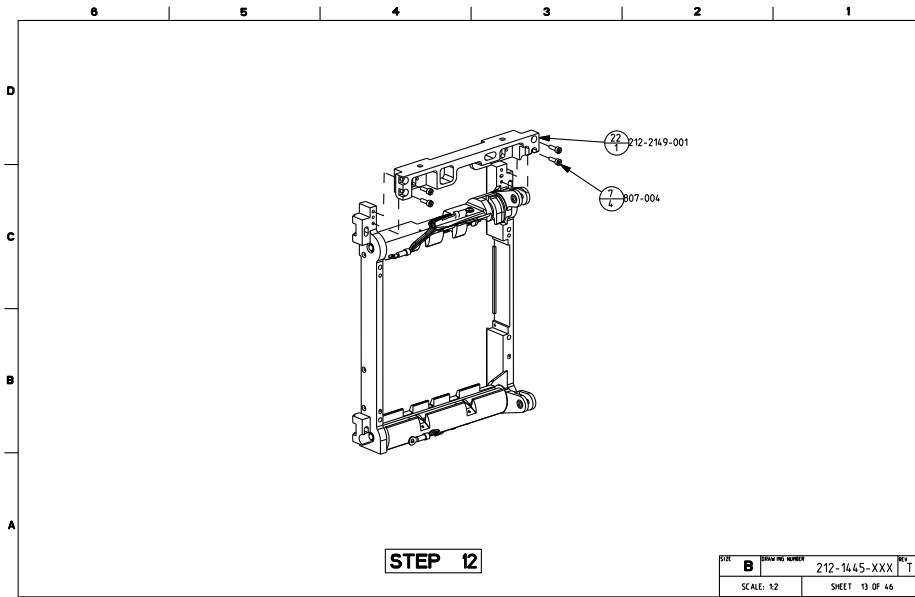
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38	212-2174-001	BRACKET,ENCLOSURE,ATTACHMENT	1
39	212-3249-501S	ASSY,PCB,FLOW SENSOR SERVICE	1
40	212-2936-502	ASSY,FLUIDICS,CTRL W/KERNEL	1
40	212-2936-501	ASSY,FLUIDICS,CTRL W/KERNEL - SUB	1
42	807-001	SCREW,CAP HD SKT,M3X5 SST	26
43	807-142	SCREW,CAP HD SKT,M2.0X6 SST	4
44	212-2120-001	BRACKET,BOARD,MAIN	1
45	212-2557-001	TRAY,BOTTOM,FLUIDICS	1
46	212-2118-001	TRAY,ENCLOSURE	1
47	809-006	SCREW,BTN HD SKT,M4X8 SST	8
48	801-004	WASHER,FLAT,M4 SST	4
49	212-2617-001	BRACKET,TUBE,HOSPITAL	1
50	663-019	GROMMET,RUBBER,.69X.38	1
51	212-2291-001	CABLE ASSY,SUCTION CNTRL,W86	1
52	212-2252-001	CABLE ASSY,INF CONTROLLER,W88	1
53	212-2211-001	BRACKET,ACTUATOR,ATTACHMENT	1
54	801-005	WASHER,FLAT,M5 SST	3
55	807-026	SCREW,CAP HD SKT,M5X10 SST	3
56	212-1909-001	BEZEL,MODULE,FLUIDICS	1
57	827-001	SCREW,CAP HD,M2X0.4X5 SST W/CT	5
58	212-1981-001	BRACKET,MOUNT,PUMP	1
59	212-2290-001	CABLE ASSY,LPAS PUMP,W104	1
60	807-002	SCREW,CAP HD SKT,M3X6 SST	2
61	663-057	GROMMET,ISLR,.245ID W/O FERR	3
62	801-003	WASHER,FLAT,M3 SST	15
64	212-1473-501	ASSY,PCB,FLUIDICS SUCTION	1
65	807-147	SCREW,CAP HD SKT,M2.5X5 SST	4
66	801-025	WASHER,FLAT,M2.5 SST	4
67	212-2294-001	CABLE ASSY,SMC/CASS REL,W95	1
69	212-2555-001	TUBING,HOSPITAL,FORMED .375OD	1
70	212-2742-001	BRACKET,FAN	1
71	212-2937-001	CABLE ASSY,FAN,W160/W84	2
72	809-103	SCREW,BTN HD SKT,M4X6 SST	2
73	807-009	SCREW,CAP HD SKT,M3X30 SST	8
74	212-2542-001	COVER,HOUSING,FLUIDICS	1
75	796-013	WASHER,FLAT,NO.10 SST	1

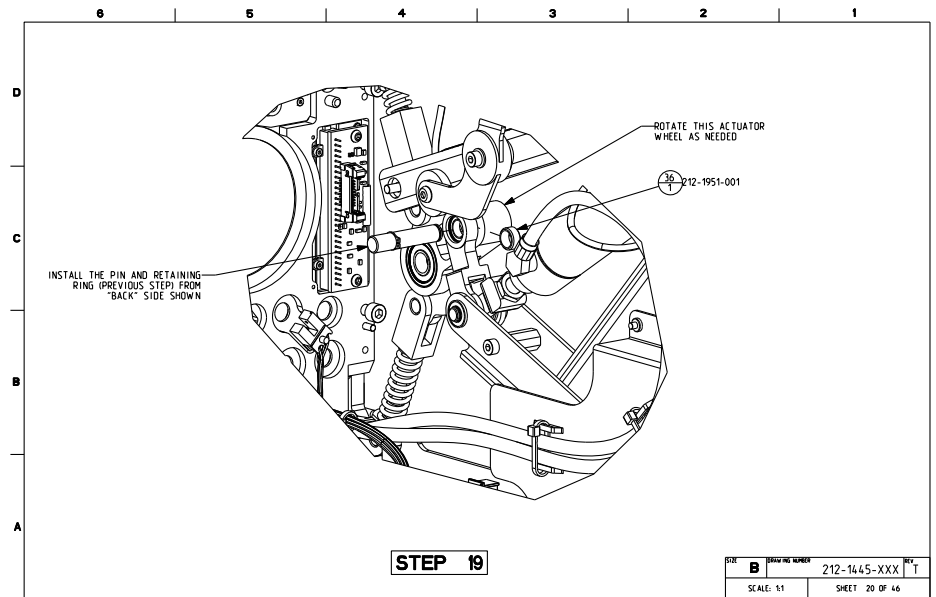
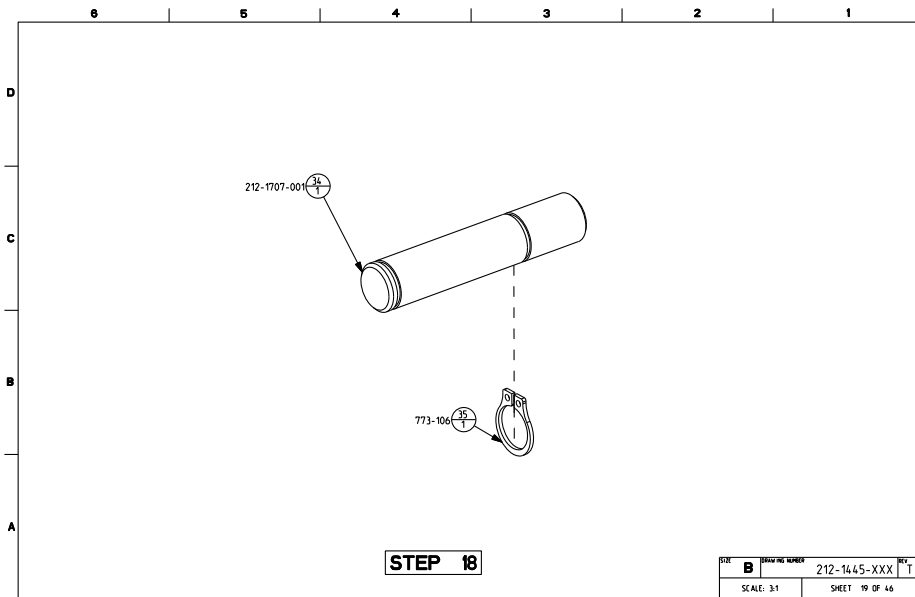
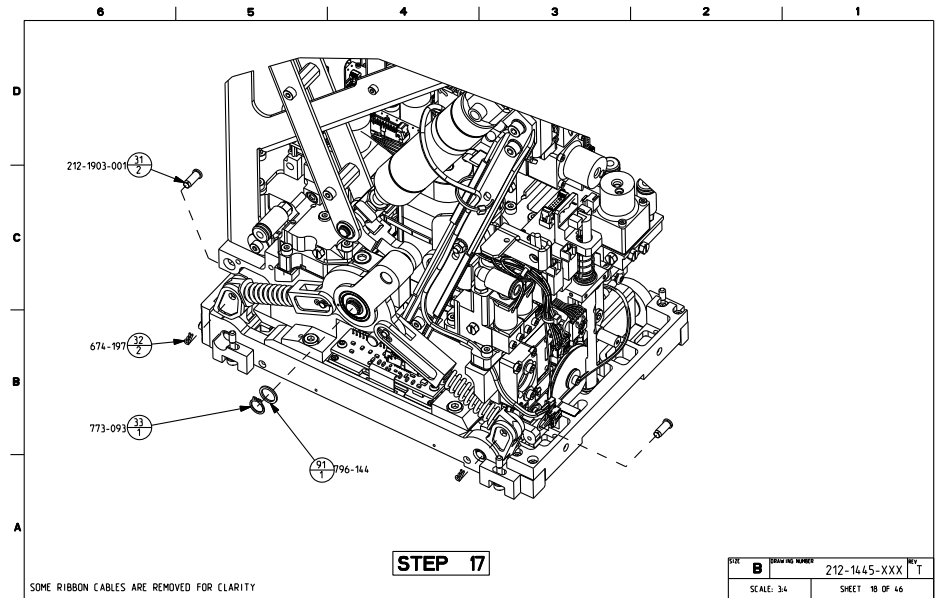
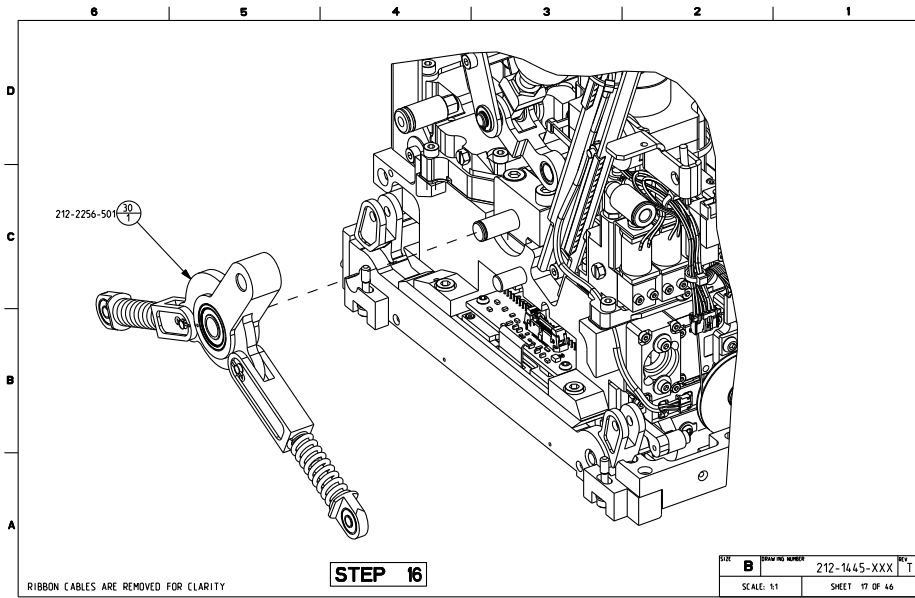
ITEM #	PART NUMBER	DESCRIPTION	QTY
77	674-182	FASTENER,BALL STUD,ZINC PLATE	4
78	212-2759-001	FERRULE,M4,THREADED	3
79	212-2736-001	COVER,RETENTION,WIRE	1
80	212-2935-001	SHIELD,EMI,RJ45 FLUIDICS	1
81	212-2755-001	CABLE ASSY,GND CLAMP	1
82	212-2756-001	CABLE ASSY,GND CLAMP LOWER	1
83	800-103	WASHER,EXT LOCK,M3 SST	2
84	809-001	SCREW,BTN HD SKT,M3X6 SST	4
85	893-630	FITTING,CLAMP,TUBE .281 ID BRS	2
86	212-2284-001	CABLE ASSY,POS SENS PINCH,W105	1
87	212-2643-001	SPACER,SENSOR,POSITION	8
88	828-002	SCREW,CAP,BTN HD M3X0.5X10 CTN	4
89	026-059	CLAMP,CABLE,.187 DIA NYLON	3
90	603-035	BUSHING,SNAP,.26IDX.45ODX.26L	1
91	796-144	WASHER,FLAT,.381X.495X.035 SST	1
91	892-042	ADHESIVE,THREADLOCKER,242 BLUE	0
92	774-178	O-RING,.239IDX.379OD,VITON	5
93	827-002	SCREW,CAP HD,M2X0.4X8 SST W/CT	2
94	827-012	SCREW,CAP HD,M3X0.5X8 SST W/CT	3

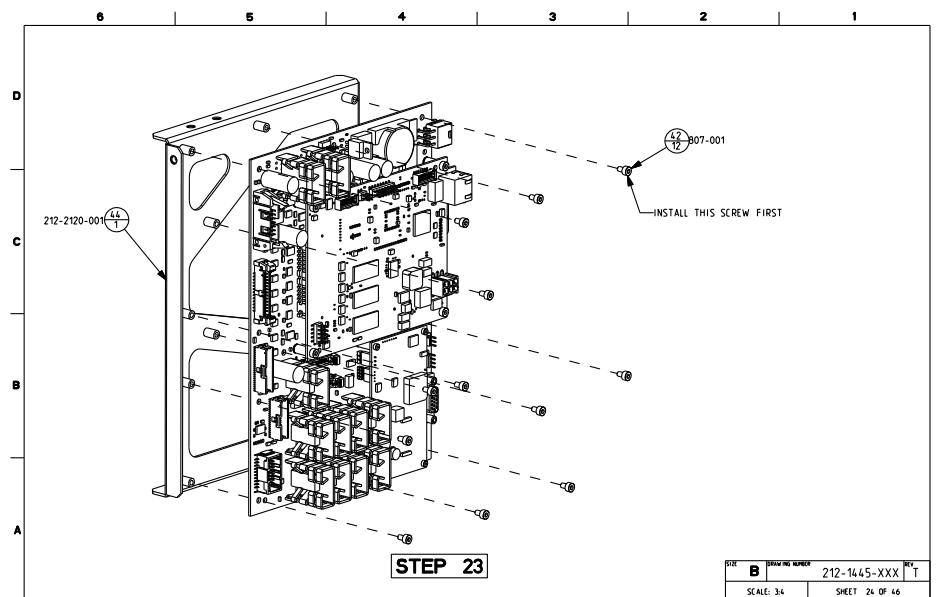
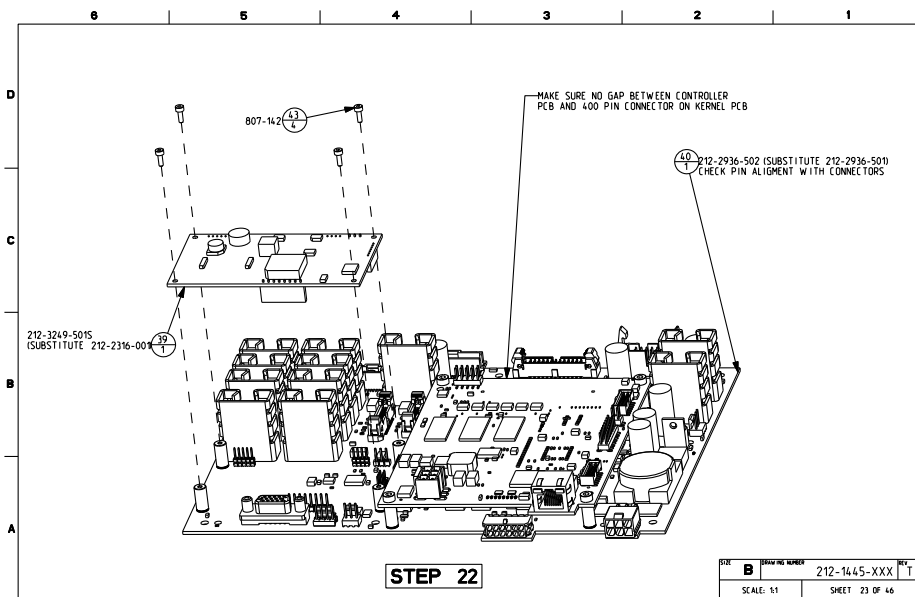
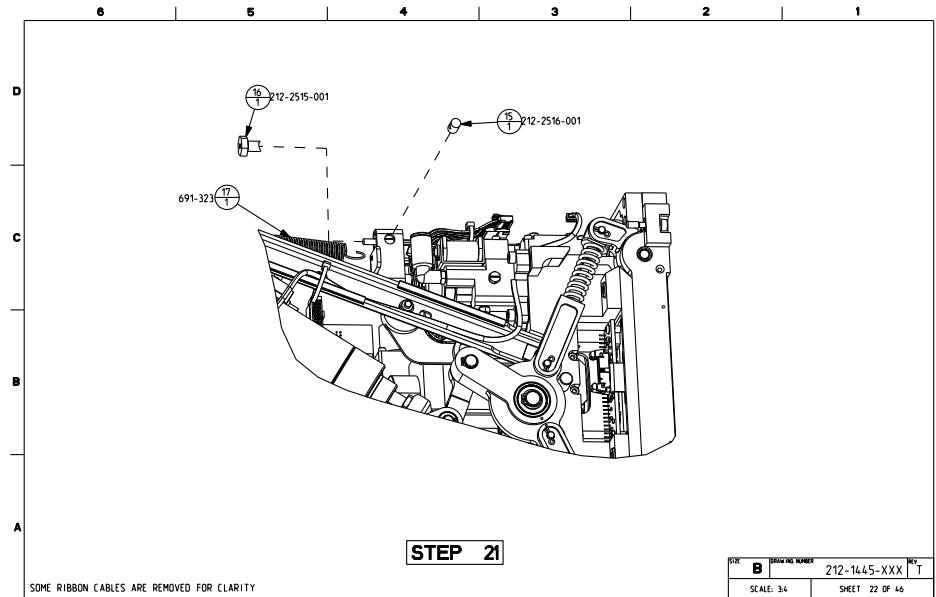
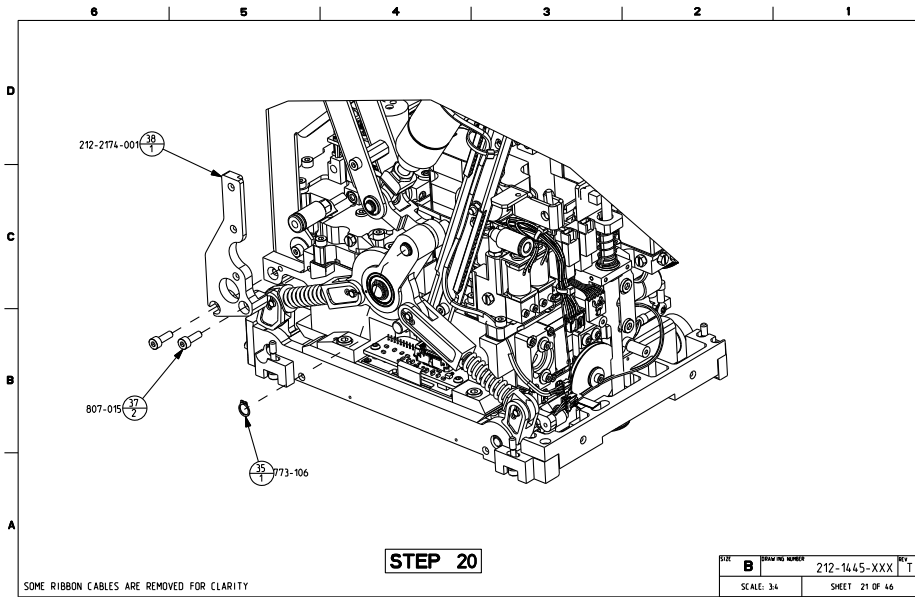


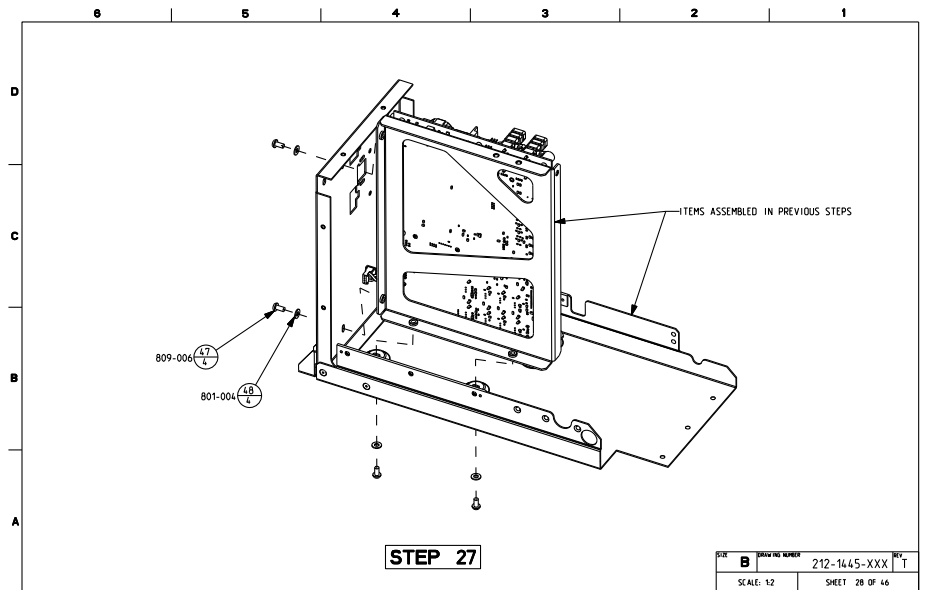
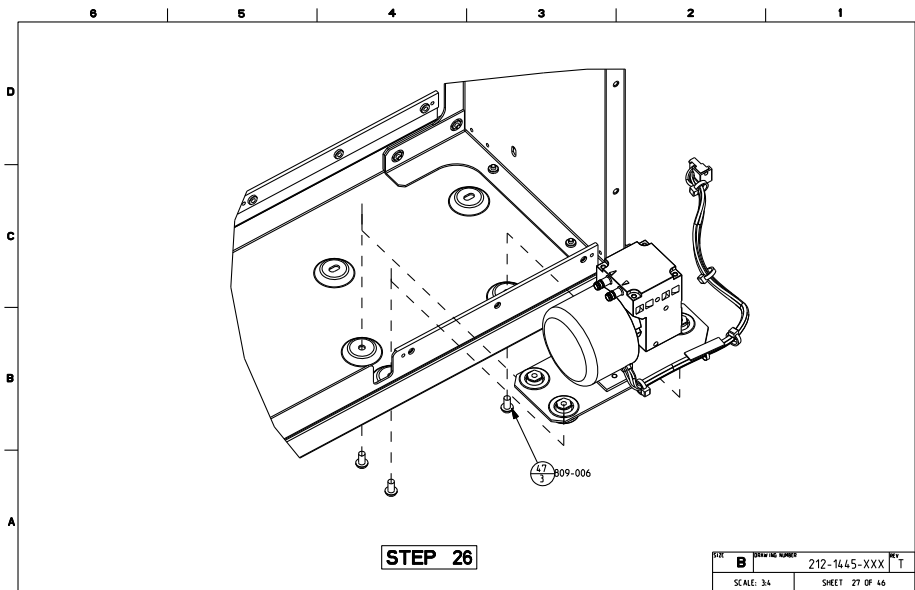
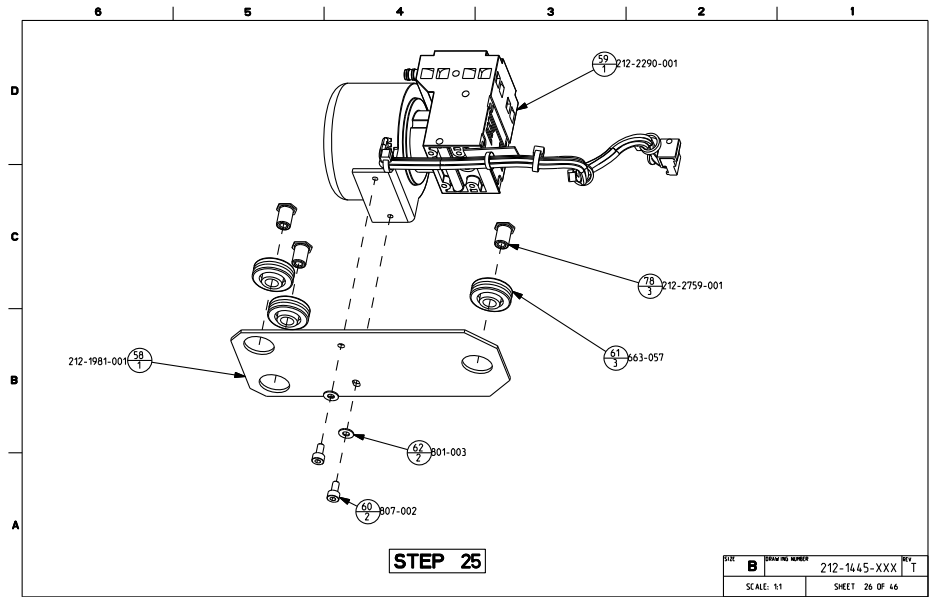
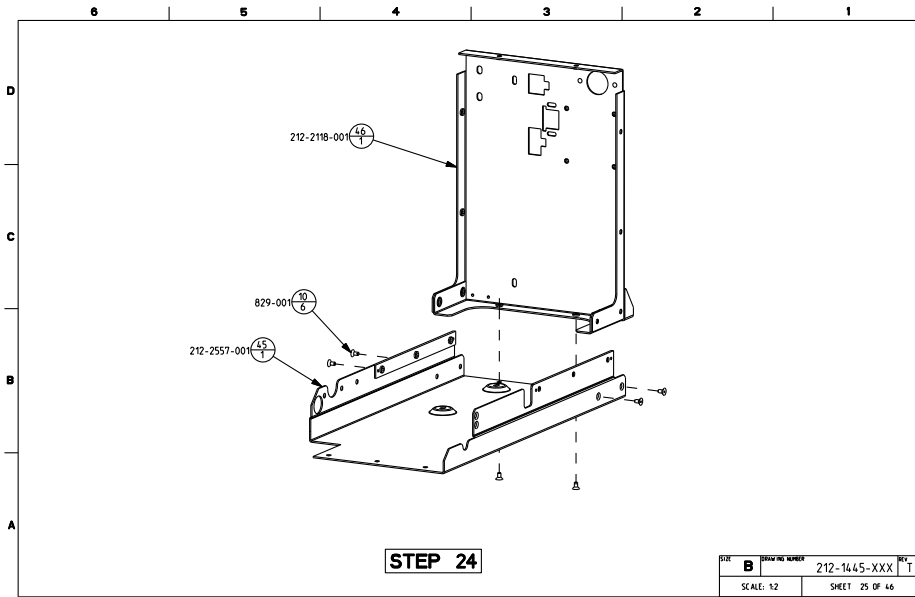


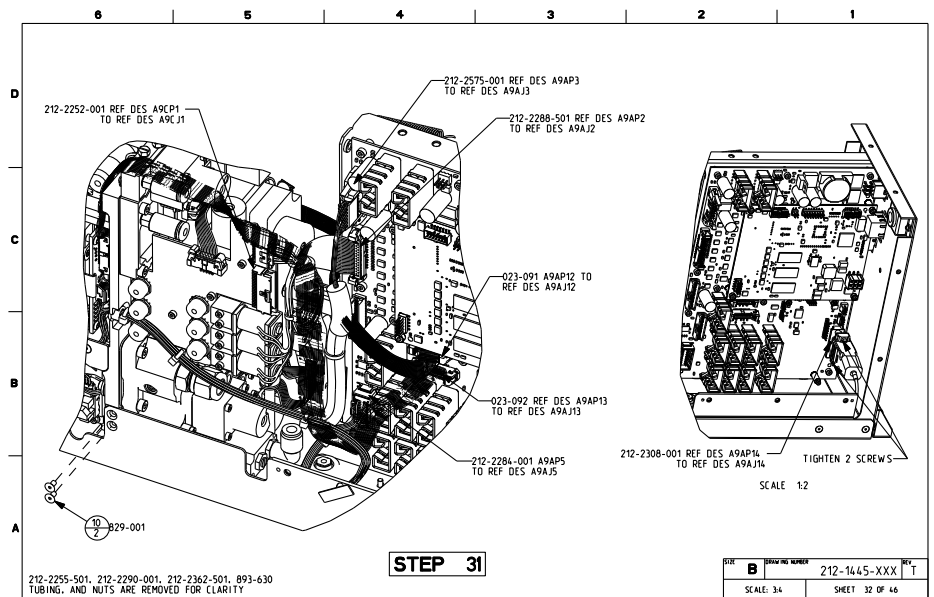
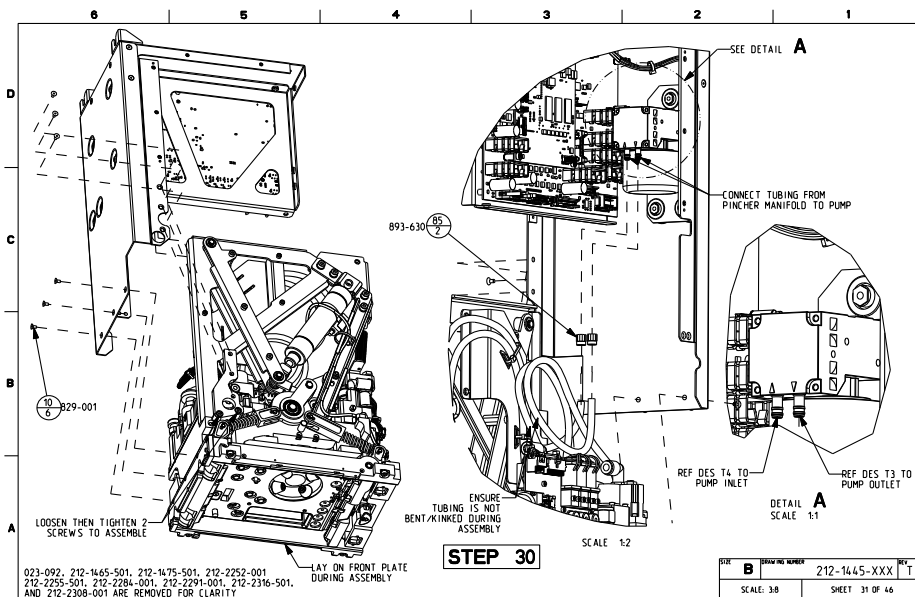
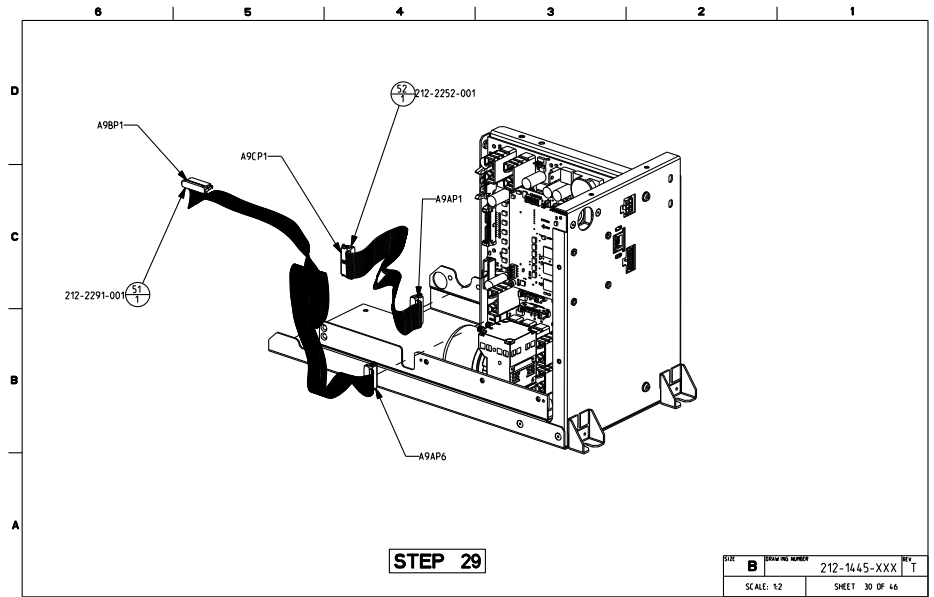
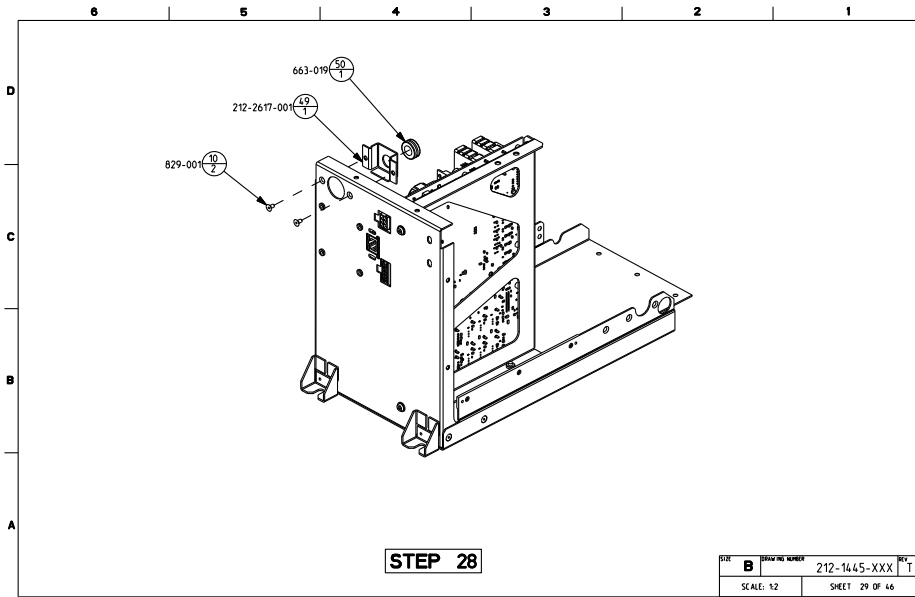


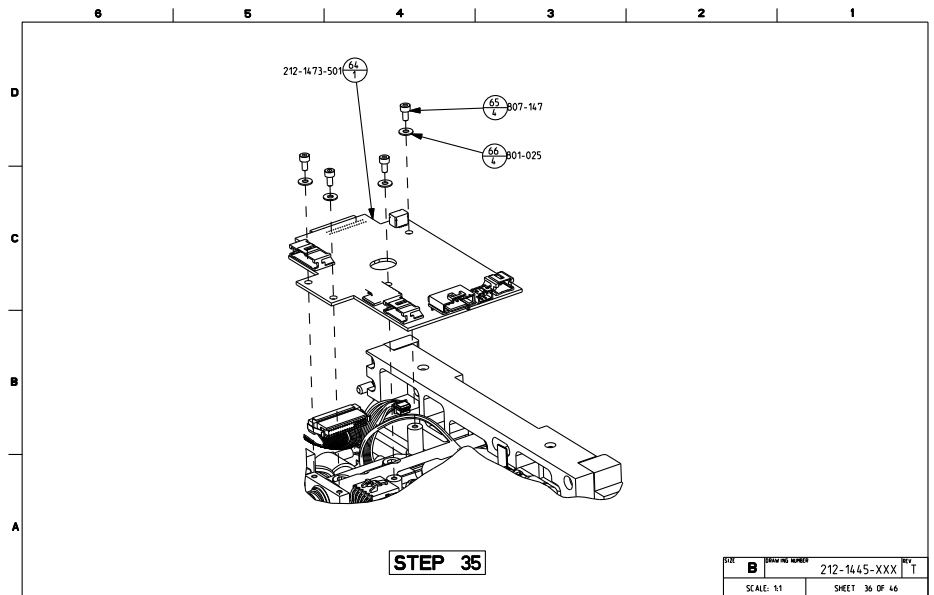
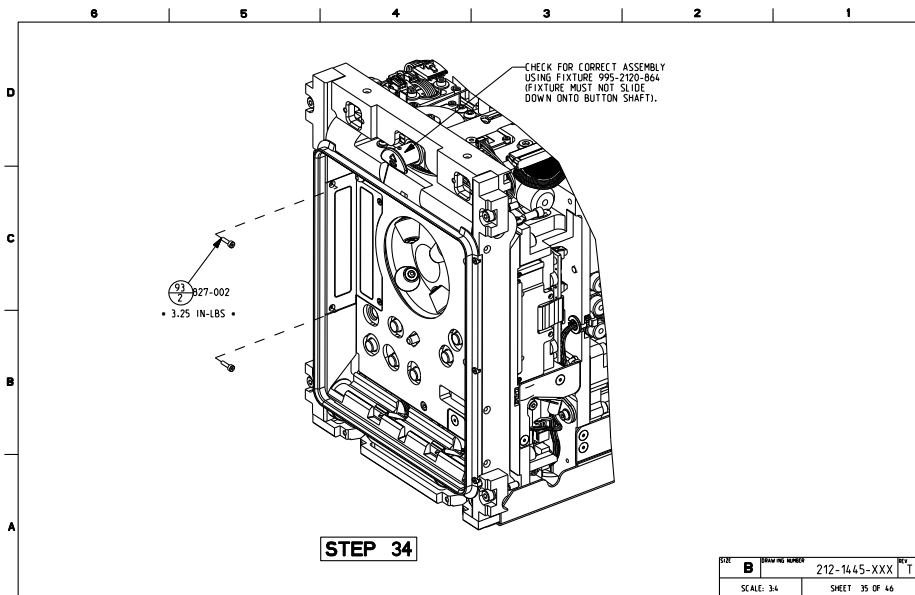
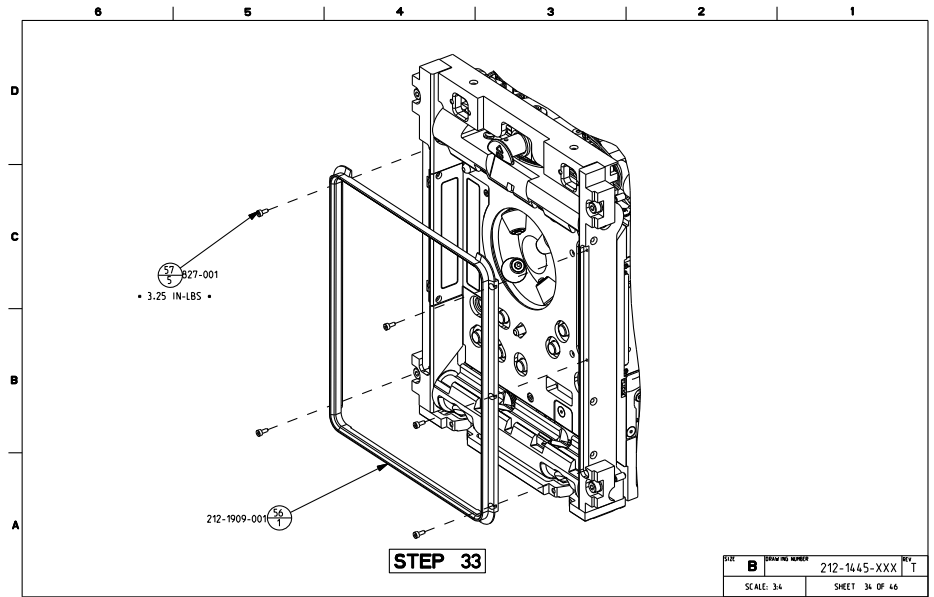
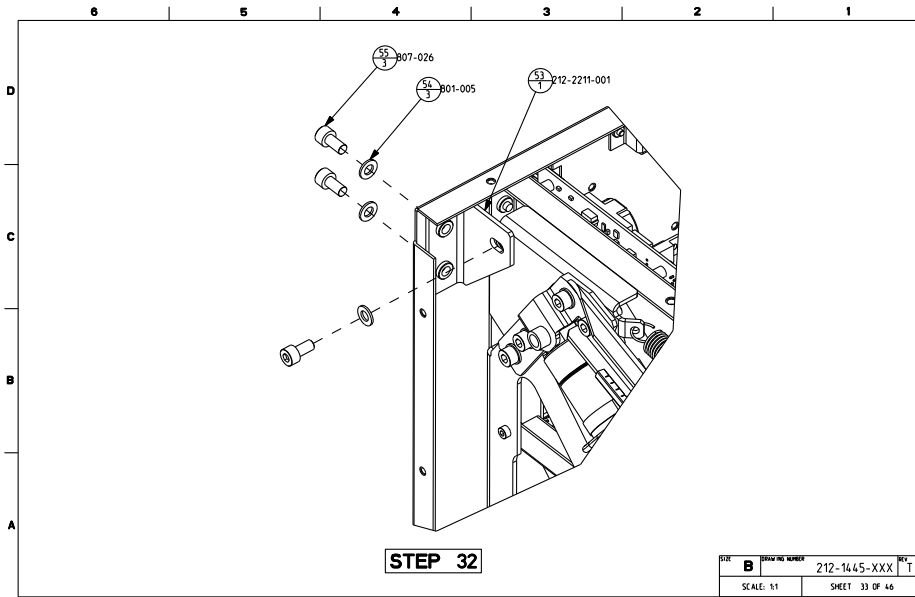


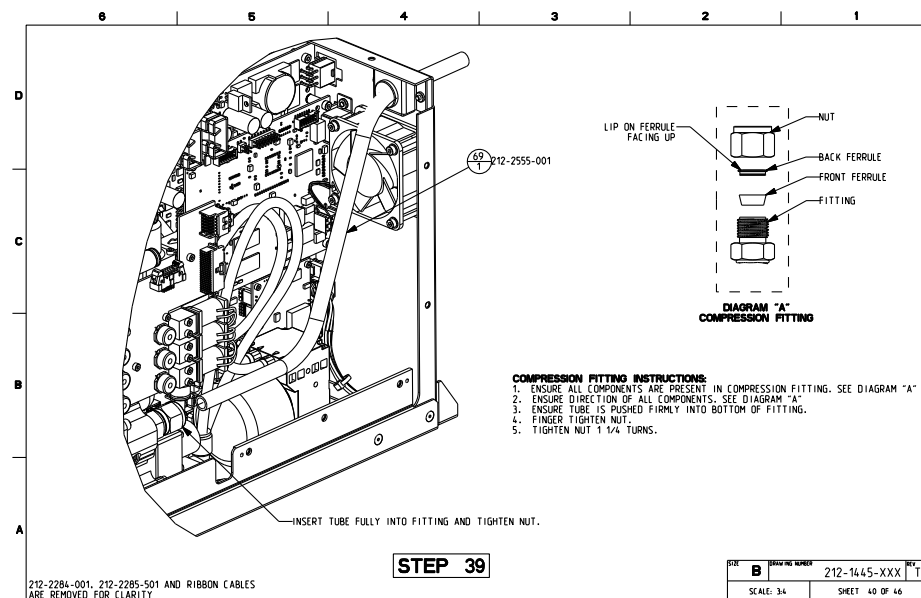
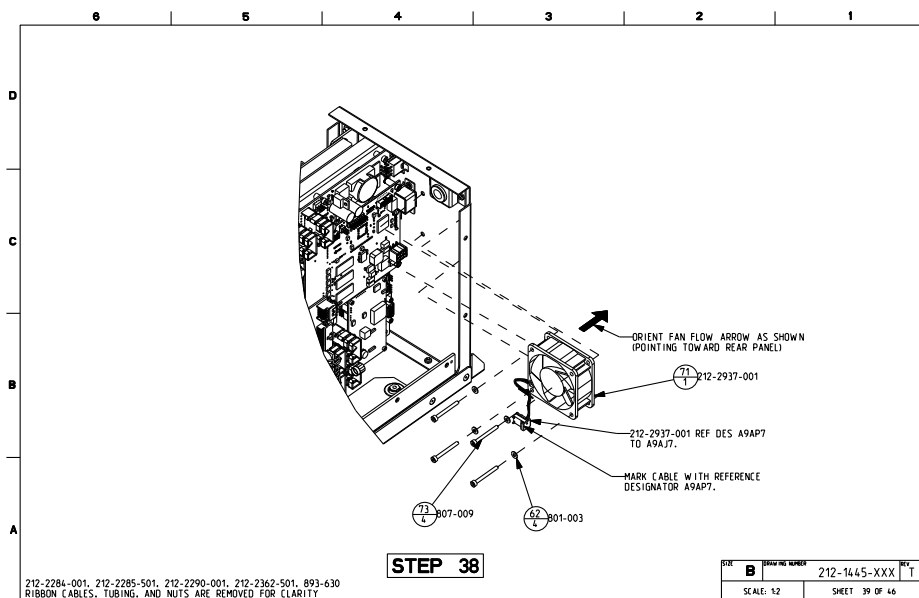
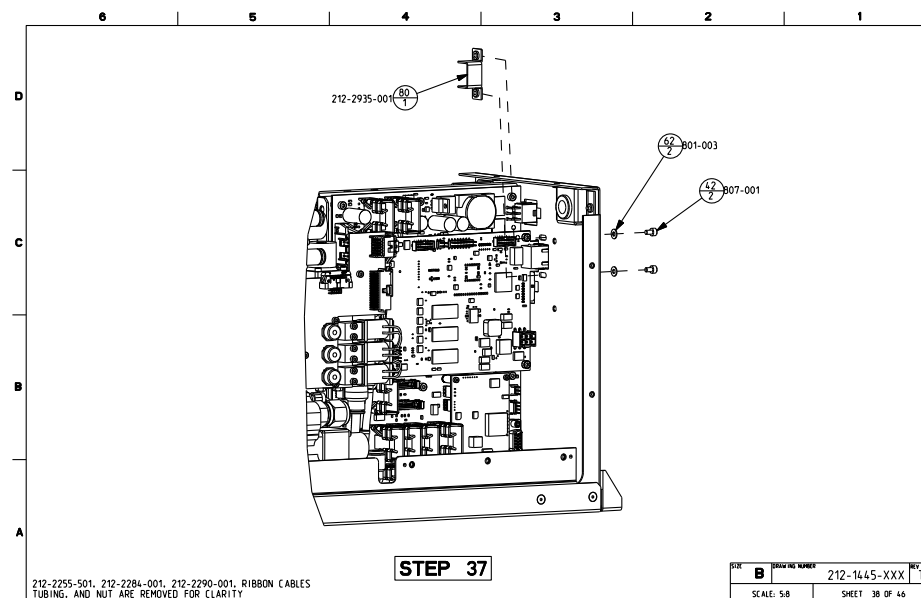
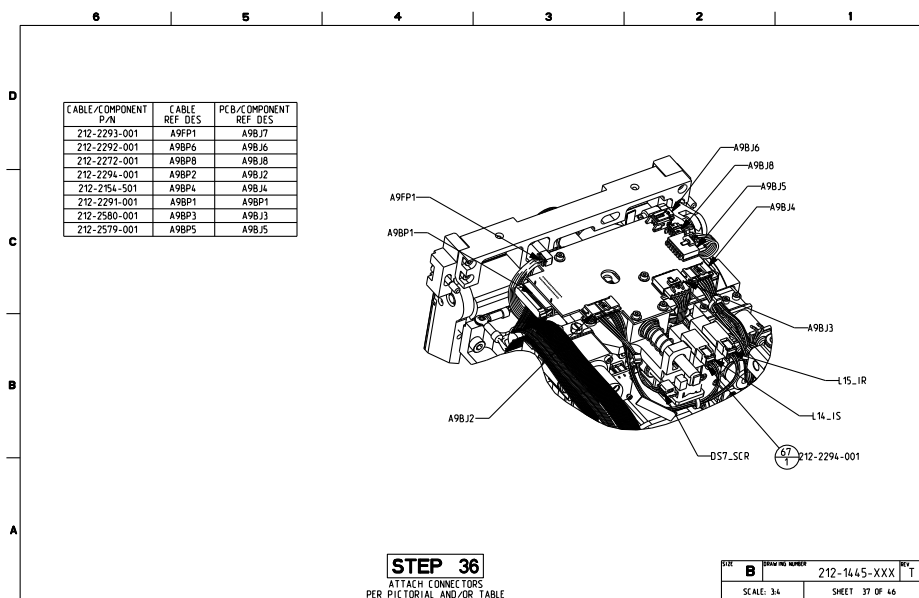


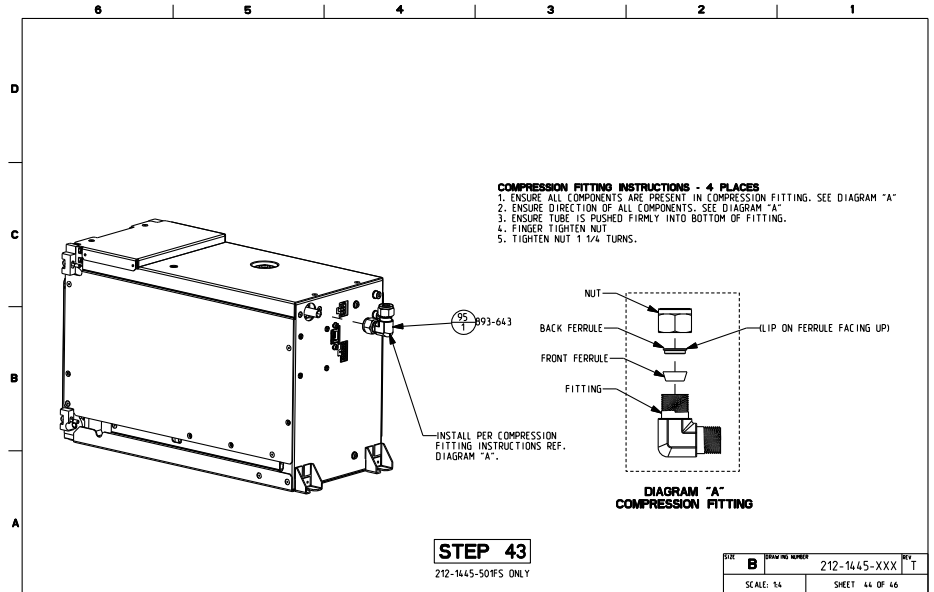
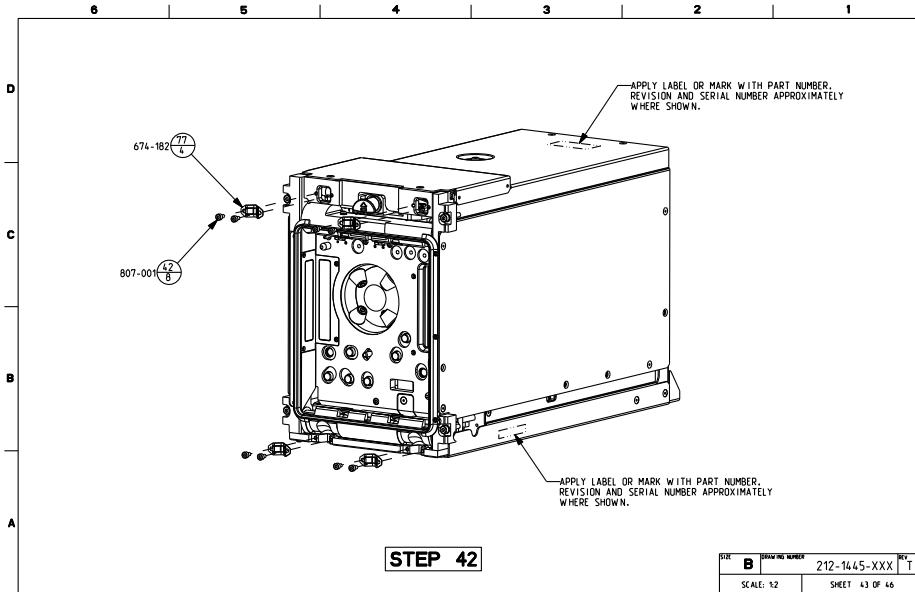
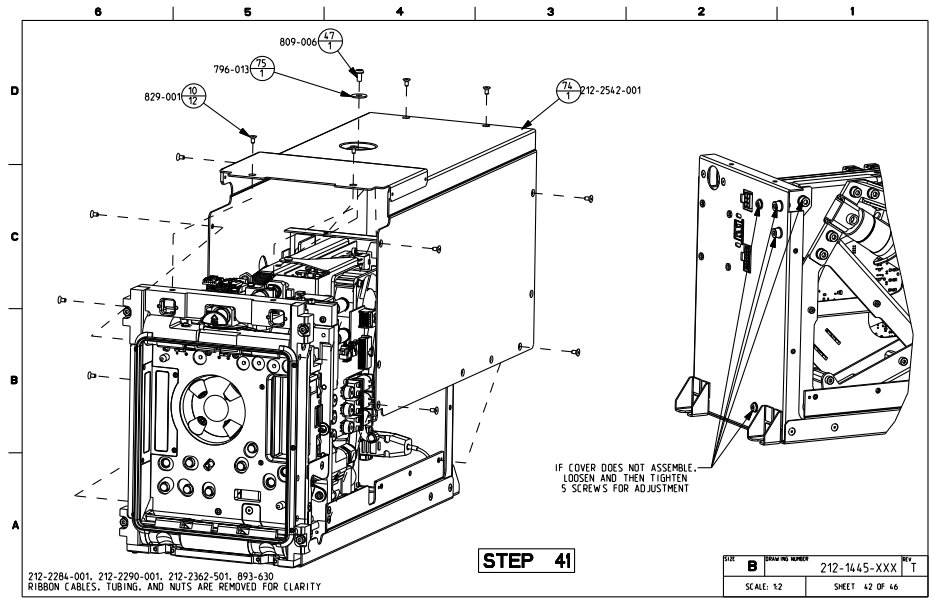
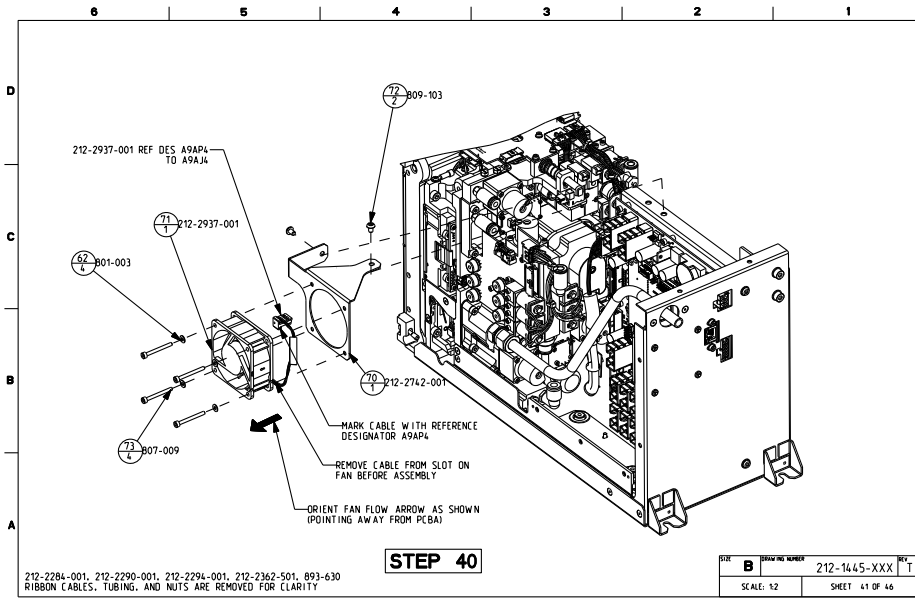


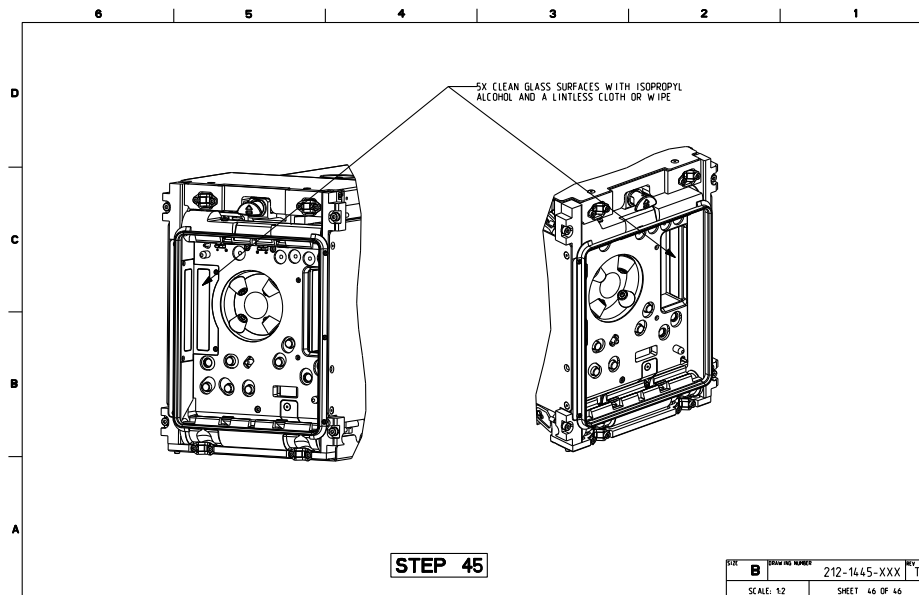
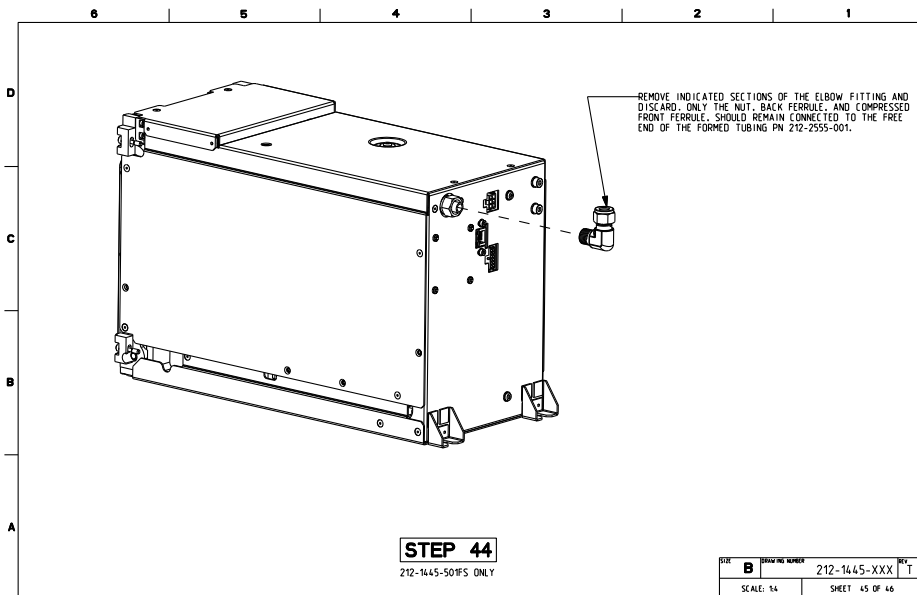












212-2255-501 ASSY, MANIFOLD, PRIMARY

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1723-001	COVER,REFLUX ACCUMULATOR	1
002	774-179	O-RING,.926IDX1.066OD,VITON	1
004	807-152	SCREW,CAP HD SKT,M2.5X16 SST	4
005	212-2579-001	SENSOR,PRESSURE,ABS 100	1
006	891-028	LUBRICANT,GREASE,HIGH-VACUUM	AR
007	798-336	WASHER,FLAT,.125X.375X.030 SST	2
008	807-001	SCREW,CAP HD SKT,M3X5 SST	2
009	893-668	FITTING,BLEED PLUG,.066ID BRS	1
010	212-2939-001	PUMP,VACUUM,MINI X10L CONN Z	1
011	807-150	SCREW,CAP HD SKT,M2.5X10 SST	7
012	895-289	MUFFLER,.125 NPT,PLASTIC	1
013	773-083	RING,RETAINING,EXT M7 SPR STL	1
014	212-2575-001	MOTOR,STEPPER,W/ENCODER W101	1
015	210-2056-001	WASHER,CENTERING	1
016	210-3285-001	PLATE,BEARING,ROLLER HUB	1
017	212-2857-001	SPRING,CPRSN,1.66X.72ID SST	1
018	891-025	LUBRICANT,LITHIUM GEL,368AX-1	AR
019	796-013	WASHER,FLAT,NO.10 SST	1
020	809-006	SCREW,BTN HD SKT,M4X8 SST	1
021	210-2408-001	HUB,ROLLER ASSY,FLUIDICS	1
022	807-013	SCREW,CAP HD SKT,M4X8 SST	4
023	801-004	WASHER,FLAT,M4 SST	4
024	212-1722-001	PLATE,ADAPTER,PUMP	1
025	807-015	SCREW,CAP HD SKT,M4X12 SST	8
026	212-2351-001	SHAFT ASSY,MOUNT	1
027	807-046	SCREW,CAP HD SKT,M6X30 SST	2
028	241-065	PHOTOTRANSISTOR,HI RESOLN,.5MM	3
029	212-2292-002	CABLE ASSY,CASS IN SENSOR,W106	1
030	212-3308-001	BRACKET,SWITCH,LOWER	1
031	807-147	SCREW,CAP HD SKT,M2.5X5 SST	2
032	212-3307-001	DETECTOR,CASSETTE,LOWER	1
033	691-330	SPRING,TORSION,305OD X.030 SST	1
034	814-005	SCREW,SHLDR,SKT HD M3X10.013	2
035	796-128	WASHER,FLAT,.187X.250X.010 SST	1
036	212-3301-001	BRACKET,MOUNT,UPPER	1
037	212-2292-001	CABLE ASSY,CASS IN SENSOR,W98	1
038	212-3302-001	BRACKET,SWITCH,UPPER	1

ITEM #	PART NUMBER	DESCRIPTION	QTY
039	807-157	SCREW,CAP HD SKT,M2.5X20 SST	1
040	807-149	SCREW,CAP HD SKT,M2.5X8 SST	1
041	801-025	WASHER,FLAT,M2.5 SST	3
042	212-2293-001	CABLE ASSY,CASSETTE ID,W85	1
043	212-3309-001	PROBE,DETECTOR,UPPER CASSETTE	1
046	886-012	VALVE,CHECK,.5 DIA .15 PSI	1
047	212-1919-005	GASKET,MANIFOLD,PINCHER .062	1
048	212-2173-501	ASSY,MANIFOLD,PINCHER	1
049	827-005	SCREW,CAP HD,M4X.7X20 SST W/CT	10
050	827-008	SCREW,CAP HD,M4X.7X40 SST W/CT	9
051	212-1711-001	GASKET,MANIFOLD,INFUSION .031	1
052	212-2172-501	ASSY,MANIFOLD,INFUSION	1
053	212-1710-001	GASKET,MANIFOLD,ASP .031	1
054	212-2154-501	ASSY,MANIFOLD,ASP FLUIDICS	1
055	827-004	SCREW,CAP HD,M4X.7X16 SST W/CT	5
057	655-053	PLUG,HEX SOCKET,.125NPT	1
058	212-2310-001	CYLINDER,REV ACTING,.5625 BORE	6
059	774-177	O-RING,.551IDX.691OD,VITON	12
060	212-2311-001	CYLINDER,NOR ACTING,.4375 BORE	3
061	774-176	O-RING,.426IDX.566OD,VITON	4
062	774-175	O-RING,.301IDX.441OD,VITON	4
063	212-2325-001	PINCHER ASSY,NC VALVE	1
064	212-2282-501	ASSY,PINCHER,NIF	1
065	212-2352-001	BRACKET ASSY,RELEASE,CASS	1
066	212-3311-001	BUTTON,RELEASE,CASSETTE	1
067	691-318	SPRING,CPRSN,.468 OD X 1.38 MW	1
068	212-1718-001	CABLE ASSY,CASSETTE RELEASE	1
069	212-3303-001	BRACKET,BUTTON,RETURN	1
070	809-103	SCREW,BTN HD SKT,M4X6 SST	2
071	212-1234-001	PULLEY,CABLE RELEASE,1.70	1
072	212-1348-001	SPACER,PULLEY	1
073	807-005	SCREW,CAP HD SKT,M3X12 SST	1
074	807-027	SCREW,CAP HD SKT,M5X12 SST	2
079	040-367	TUBING,NYLON,.180X.250OD	1
080	023-091	CABLE,RIBBON,20 COND 20 INCH	1
081	212-2815-001	RETAINER,CABLE,ASP LVL SENS	1
082	807-006	SCREW,CAP HD SKT,M3X16 SST	2
083	827-007	SCREW,CAP HD,M4X.7X30 SST W/CT	1

ITEM #	PART NUMBER	DESCRIPTION	QTY
086	027-009	CABLE TIE,3.00X11.00L,NYLON	1
087	212-2755-001	CABLE ASSY,GND CLAMP	1
088	809-001	SCREW,BTN HD SKT,M3X6 SST	1
089	807-140	SCREW,CAP HD SKT,M2.0X4 SST	1
090	691-317	SPRING,CPRSN,.203ODX.63 MW	1
AR = As Required			

212-2255-502 ASSY, MANIFOLD, PRIMARY

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1723-001	COVER,REFLUX ACCUMULATOR	1
002	774-179	O-RING,.926IDX1.066OD,VITON	1
003	212-3424-001	MANIFOLD ASSY,PRIMARY,FLUIDICS	1
004	807-152	SCREW,CAP HD SKT,M2.5X16 SST	4
005	212-2579-001	SENSOR,PRESSURE,ABS 100	1
006	891-028	LUBRICANT,GREASE,HIGH-VACUUM	AR
007	798-336	WASHER,FLAT,.125X.375X.030 SST	2
008	807-001	SCREW,CAP HD SKT,M3X5 SST	2
009	893-668	FITTING,BLEED PLUG,.066ID BRS	1
010	212-3343-001	PUMP,VACUUM,Z-048	1
011	807-150	SCREW,CAP HD SKT,M2.5X10 SST	7
012	895-289	MUFFLER,.125 NPT,PLASTIC	1
013	773-083	RING,RETAINING,EXT M7 SPR STL	1
014	212-2575-001	MOTOR,STEPPER,W/ENCODER W101	1
015	210-2056-001	WASHER,CENTERING	1
016	210-3285-001	PLATE,BEARING,ROLLER HUB	1
017	212-2857-001	SPRING,CPRSN,1.66X.72ID SST	1
018	891-025	LUBRICANT,LITHIUM GEL,368AX-1	AR
019	796-013	WASHER,FLAT,NO.10 SST	1
020	809-006	SCREW,BTN HD SKT,M4X8 SST	1
021	210-2408-001	HUB,ROLLER ASSY,FLUIDICS	1
022	807-013	SCREW,CAP HD SKT,M4X8 SST	4
023	801-004	WASHER,FLAT,M4 SST	4
024	212-1722-001	PLATE,ADAPTER,PUMP	1
025	807-015	SCREW,CAP HD SKT,M4X12 SST	8
026	212-2351-001	SHAFT ASSY,MOUNT	1
027	807-046	SCREW,CAP HD SKT,M6X30 SST	2
028	241-065	PHOTOTRANSISTOR,HI RESOLN,.5MM	3
029	212-2292-002	CABLE ASSY,CASS IN SENSOR,W106	1
030	212-3308-001	BRACKET,SWITCH,LOWER	1
031	807-147	SCREW,CAP HD SKT,M2.5X5 SST	2
032	212-3307-001	DETECTOR,CASSETTE,LOWER	1
033	691-330	SPRING,TORSION,305OD X.030 SST	1
034	814-005	SCREW,SHLDR,SKT HD M3X10.013	2
035	796-128	WASHER,FLAT,.187X.250X.010 SST	1
036	212-3301-001	BRACKET,MOUNT,UPPER	1
037	212-2292-001	CABLE ASSY,CASS IN SENSOR,W98	1

ITEM #	PART NUMBER	DESCRIPTION	QTY
038	212-3302-001	BRACKET,SWITCH,UPPER	1
039	807-157	SCREW,CAP HD SKT,M2.5X20 SST	1
040	807-149	SCREW,CAP HD SKT,M2.5X8 SST	1
041	801-025	WASHER,FLAT,M2.5 SST	3
042	212-2293-001	CABLE ASSY,CASSETTE ID,W85	1
043	212-3309-001	PROBE,DETECTOR,UPPER CASSETTE	1
046	886-012	VALVE,CHECK,.5 DIA .15 PSI	1
047	212-1919-005	GASKET,MANIFOLD,PINCHER .062	1
048	212-2173-501	ASSY,MANIFOLD,PINCHER	1
049	827-005	SCREW,CAP HD,M4X.7X20 SST W/CT	10
050	827-008	SCREW,CAP HD,M4X.7X40 SST W/CT	9
051	212-1711-001	GASKET,MANIFOLD,INFUSION .031	1
053	212-1710-001	GASKET,MANIFOLD,ASP .031	1
054	212-2154-502	ASSY,MANIFOLD,ASP FLUIDICS	1
055	827-004	SCREW,CAP HD,M4X.7X16 SST W/CT	5
057	655-053	PLUG,HEX SOCKET,.125NPT	1
058	212-2310-001	CYLINDER,REV ACTING,.5625 BORE	6
059	774-177	O-RING,.551IDX.691OD,VITON	12
060	212-2311-001	CYLINDER,NOR ACTING,.4375 BORE	3
061	774-176	O-RING,.426IDX.566OD,VITON	4
062	774-175	O-RING,.301IDX.441OD,VITON	4
063	212-2325-001	PINCHER ASSY,NC VALVE	1
064	212-2282-501	ASSY,PINCHER,NIF	1
065	212-2352-001	BRACKET ASSY,RELEASE,CASS	1
066	212-3311-001	BUTTON,RELEASE,CASSETTE	1
067	691-318	SPRING,CPRSN,.468 OD X 1.38 MW	1
068	212-1718-001	CABLE ASSY,CASSETTE RELEASE	1
069	212-3303-001	BRACKET,BUTTON,RETURN	1
070	809-103	SCREW,BTN HD SKT,M4X6 SST	2
071	212-1234-001	PULLEY,CABLE RELEASE,1.70	1
072	212-1348-001	SPACER,PULLEY	1
073	807-005	SCREW,CAP HD SKT,M3X12 SST	1
074	807-027	SCREW,CAP HD SKT,M5X12 SST	2
079	040-367	TUBING,NYLON,.180X.250OD	1
080	023-091	CABLE,RIBBON,20 COND 20 INCH	1
081	212-2815-001	RETAINER,CABLE,ASP LVL SENS	1
082	807-006	SCREW,CAP HD SKT,M3X16 SST	2
083	827-007	SCREW,CAP HD,M4X.7X30 SST W/CT	1

ITEM #	PART NUMBER	DESCRIPTION	QTY
086	027-009	CABLE TIE,3.00X11.00L,NYLON	1
087	212-2755-001	CABLE ASSY,GND CLAMP	1
088	809-001	SCREW,BTN HD SKT,M3X6 SST	1
089	807-140	SCREW,CAP HD SKT,M2.0X4 SST	1
090	691-317	SPRING,CPRSN,.203ODX.63 MW	1
AR = As Required			

212-2255-503 ASSY, MANIFOLD, PRIMARY

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1723-001	COVER,REFLUX ACCUMULATOR	1
002	774-179	O-RING,.926IDX1.066OD,VITON	1
003	212-3424-001	MANIFOLD ASSY,PRIMARY,FLUIDICS	1
004	807-152	SCREW,CAP HD SKT,M2.5X16 SST	4
005	212-2579-001	SENSOR,PRESSURE,ABS 100	1
006	891-028	LUBRICANT,GREASE,HIGH-VACUUM	AR
007	798-336	WASHER,FLAT,.125X.375X.030 SST	2
008	807-001	SCREW,CAP HD SKT,M3X5 SST	2
009	893-668	FITTING,BLEED PLUG,.066ID BRS	1
010	212-3343-001	PUMP,VACUUM,Z-048	1
011	807-150	SCREW,CAP HD SKT,M2.5X10 SST	7
012	895-289	MUFFLER,.125 NPT,PLASTIC	1
013	773-083	RING,RETAINING,EXT M7 SPR STL	1
014	212-2575-001	MOTOR,STEPPER,W/ENCODER W101	1
015	210-2056-001	WASHER,CENTERING	1
016	210-3285-001	PLATE,BEARING,ROLLER HUB	1
017	212-2857-001	SPRING,CPRSN,.166X.72ID SST	1
018	891-025	LUBRICANT,LITHIUM GEL,368AX-1	AR
019	796-013	WASHER,FLAT,NO.10 SST	1
020	809-006	SCREW,BTN HD SKT,M4X8 SST	1
021	210-2408-001	HUB,ROLLER ASSY,FLUIDICS	1
022	807-013	SCREW,CAP HD SKT,M4X8 SST	4
023	801-004	WASHER,FLAT,M4 SST	4
024	212-1722-001	PLATE,ADAPTER,PUMP	1
025	807-015	SCREW,CAP HD SKT,M4X12 SST	8
026	212-2351-001	SHAFT ASSY,MOUNT	1
027	807-046	SCREW,CAP HD SKT,M6X30 SST	2
028	241-065	PHOTOTRANSISTOR,HI RESOLN,.5MM	3
029	212-2292-002	CABLE ASSY,CASS IN SENSOR,W106	1
030	212-3308-001	BRACKET,SWITCH,LOWER	1
031	807-147	SCREW,CAP HD SKT,M2.5X5 SST	2
032	212-3307-001	DETECTOR,CASSETTE,LOWER	1
033	691-330	SPRING,TORSION,305OD X.030 SST	1
034	814-005	SCREW,SHLDR,SKT HD M3X10.013	2
035	796-128	WASHER,FLAT,.187X.250X.010 SST	1
036	212-3301-001	BRACKET,MOUNT,UPPER	1
037	212-2292-001	CABLE ASSY,CASS IN SENSOR,W98	1


ITEM #	PART NUMBER	DESCRIPTION	QTY
038	212-3302-001	BRACKET,SWITCH,UPPER	1
039	807-157	SCREW,CAP HD SKT,M2.5X20 SST	1
040	807-149	SCREW,CAP HD SKT,M2.5X8 SST	1
041	801-025	WASHER,FLAT,M2.5 SST	3
042	212-2293-001	CABLE ASSY,CASSETTE ID,W85	1
043	212-3309-001	PROBE,DETECTOR,UPPER CASSETTE	1
046	886-012	VALVE,CHECK,.5 DIA .15 PSI	1
047	212-1919-005	GASKET,MANIFOLD,PINCHER .062	1
048	212-2173-501	ASSY,MANIFOLD,PINCHER	1
049	827-005	SCREW,CAP HD,M4X.7X20 SST W/CT	10
050	827-008	SCREW,CAP HD,M4X.7X40 SST W/CT	9
051	212-1711-001	GASKET,MANIFOLD,INFUSION .031	1
052	212-2172-501	ASSY,MANIFOLD,INFUSION	1
053	212-1710-001	GASKET,MANIFOLD,ASP .031	1
055	827-004	SCREW,CAP HD,M4X.7X16 SST W/CT	5
057	655-053	PLUG,HEX SOCKET,.125NPT	1
058	212-2310-001	CYLINDER,REV ACTING,.5625 BORE	6
059	774-177	O-RING,.551IDX.691OD,VITON	12
060	212-2311-001	CYLINDER,NOR ACTING,.4375 BORE	3
061	774-176	O-RING,.426IDX.566OD,VITON	4
062	774-175	O-RING,.301IDX.441OD,VITON	4
063	212-2325-001	PINCHER ASSY,NC VALVE	1
064	212-2282-501	ASSY,PINCHER,NIF	1
065	212-2352-001	BRACKET ASSY,RELEASE,CASS	1
066	212-3311-001	BUTTON,RELEASE,CASSETTE	1
067	691-318	SPRING,CPRSN,.468 OD X 1.38 MW	1
068	212-1718-001	CABLE ASSY,CASSETTE RELEASE	1
069	212-3303-001	BRACKET,BUTTON,RETURN	1
070	809-103	SCREW,BTN HD SKT,M4X6 SST	2
071	212-1234-001	PULLEY,CABLE RELEASE,1.70	1
072	212-1348-001	SPACER,PULLEY	1
073	807-005	SCREW,CAP HD SKT,M3X12 SST	1
074	807-027	SCREW,CAP HD SKT,M5X12 SST	2
079	040-367	TUBING,NYLON,.180X.250OD	1
080	023-091	CABLE,RIBBON,20 COND 20 INCH	1
081	212-2815-001	RETAINER,CABLE,ASP LVL SENS	1
082	807-006	SCREW,CAP HD SKT,M3X16 SST	2
083	827-007	SCREW,CAP HD,M4X.7X30 SST W/CT	1

ITEM #	PART NUMBER	DESCRIPTION	QTY
086	027-009	CABLE TIE,3.00X11.00L,NYLON	1
087	212-2755-001	CABLE ASSY,GND CLAMP	1
088	809-001	SCREW,BTN HD SKT,M3X6 SST	1
089	807-140	SCREW,CAP HD SKT,M2.0X4 SST	1
090	691-317	SPRING,CPRSN,.203ODX.63 MW	1
AR = As Required			

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.

2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.

3.  BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.

4. • XX IN-LBS • - INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE +/- 10% OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.

REVISION HISTORY

REV	ECN	DATE
P18	NOT RELEASED	3/31/08
A	20080909	4/2/08
B	20090553	4/7/09
C	20091335	7/27/09
D	20100890	04/10/10
E	CN06196ECN	75/04/11
F	CN022219ECN	99/26/11
G	CN025902ECN	12/20/11
H	CN031717ECN	06/20/12
J	CN042229ECN	36/21/13
K	CN040620ECN	08/28/13
L	CN054135ECN	03/26/14
M	CN054668ECN	75/12/14
N	CN056546ECN	08/19/14
R	CN057668ECN	09/19/14

212-2255-XXX

REV R

TABULATION

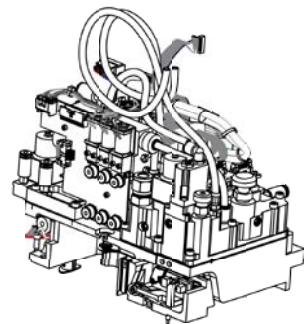
PART NUMBER	REV	DESCRIPTION
212-2255-501	R	ASSY,MANIFOLD,PRIMARY
212-2255-502	R	ASSY,MANIFOLD,PRIMARY
212-2255-503	R	ASSY,MANIFOLD,PRIMARY

SEE SEPARATE PARTS LIST

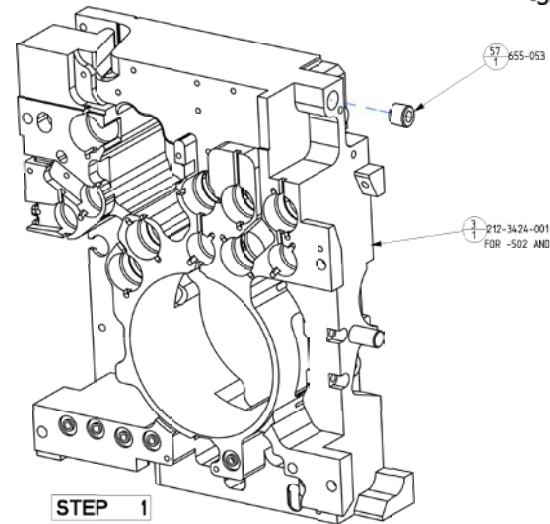
QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	J. ATHERLEY	DATE	09/18/05	
DESIGNED	N. KING	DATE	09/18/05	
APPROVED	A. HAHN	DATE	09/18/05	
PRINTED	2/23/2007			
POM INK MODEL ATTRIBUTES	NAME: 212-2255-503.PROD	VERSION: R.0		

DESCRIPTION

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.	Alcon	DESCRIPTION	ASSY,MANIFOLD,PRIMARY
SIZE	B	DRAWING NUMBER	212-2255-XXX
SCALE	1:1	SHEET	1 OF 51



-503 SHOWN

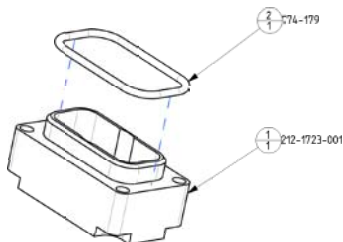


STEP 1

CONFIRM WORK AREA IS CLEAN BEFORE STARTING ASSEMBLY

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE	1:1	SHEET	2 OF 51		

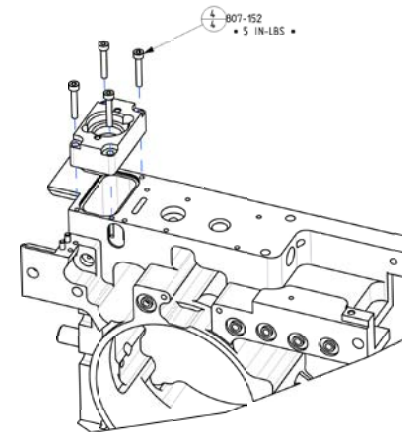
-503 SHOWN



STEP 2

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE	2:1	SHEET	3 OF 51		

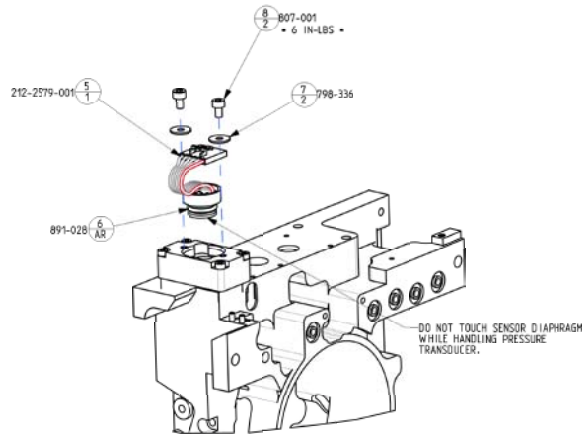
-503 SHOWN



STEP 3

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE	1:1	SHEET	4 OF 51		

-503 SHOWN

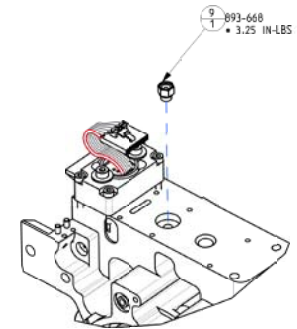


STEP 4

ASSEMBLE PRESSURE TRANSDUCER WITH CABLE ORIENTED AS SHOWN

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	1:1	SHEET	5 OF 51		

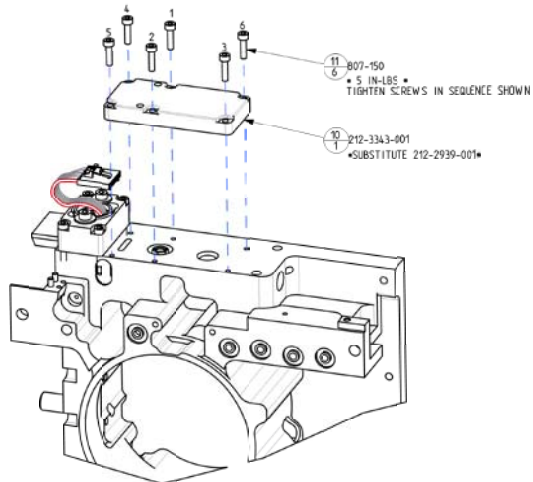
-503 SHOWN



STEP 5

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	1:1	SHEET	6 OF 51		

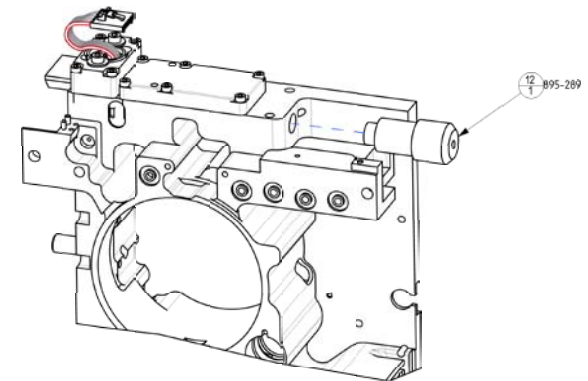
-503 SHOWN



STEP 6

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	1:1	SHEET	7 OF 51		

-503 SHOWN

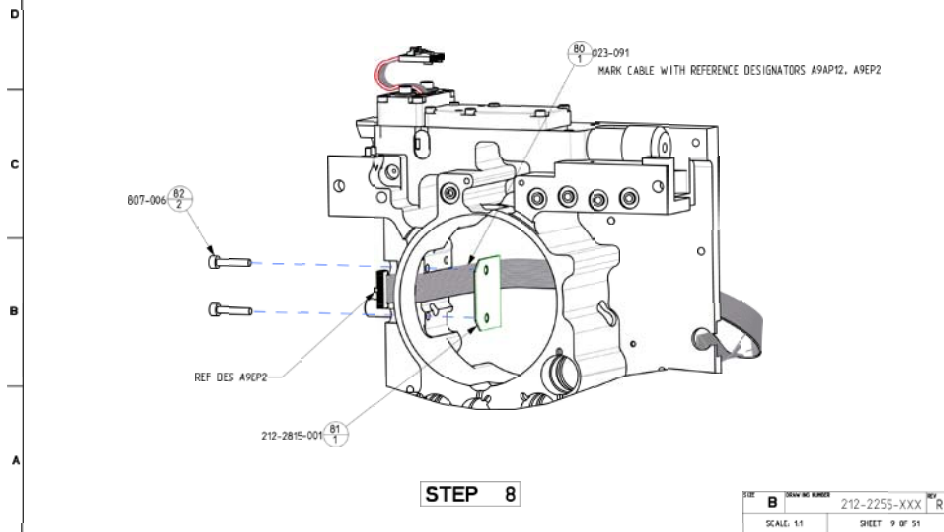


STEP 7

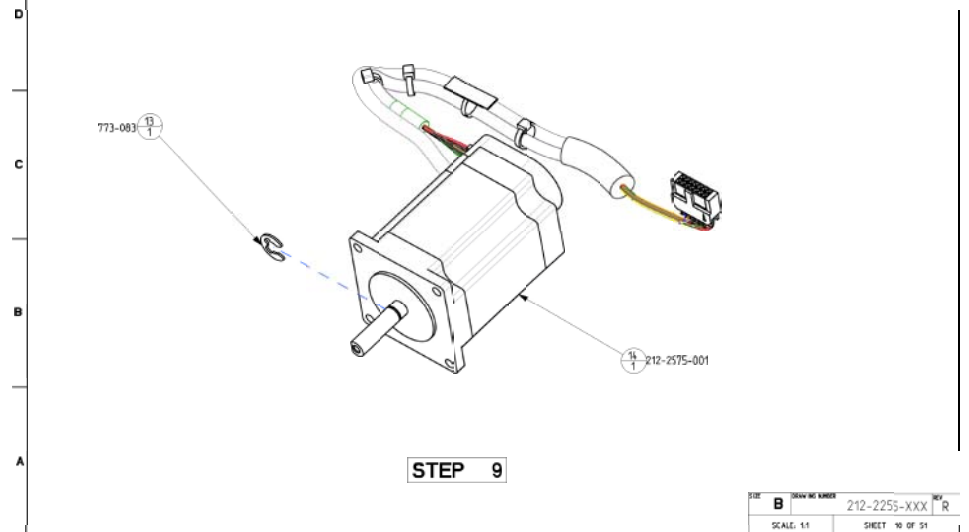
TIGHTEN MUFFLER USING NEEDLE NOSE PLIERS

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	1:1	SHEET	8 OF 51		

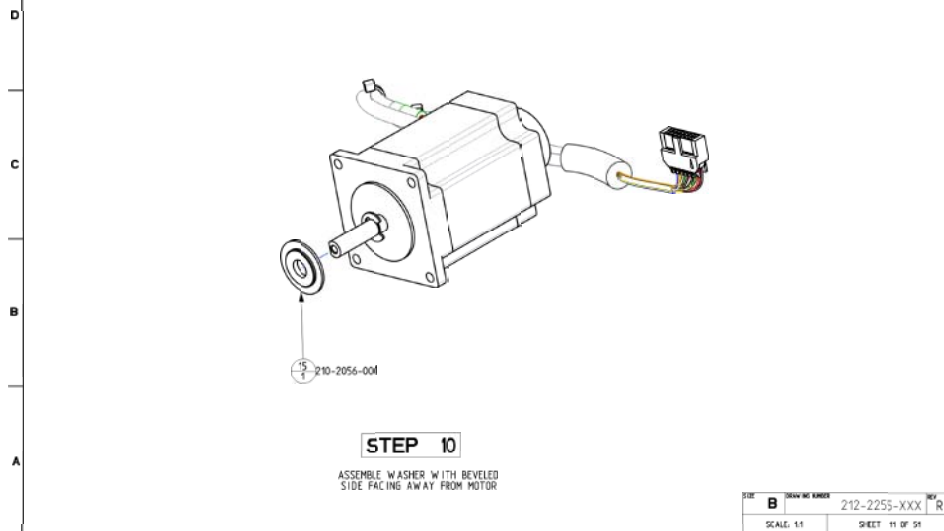
-503 SHOWN



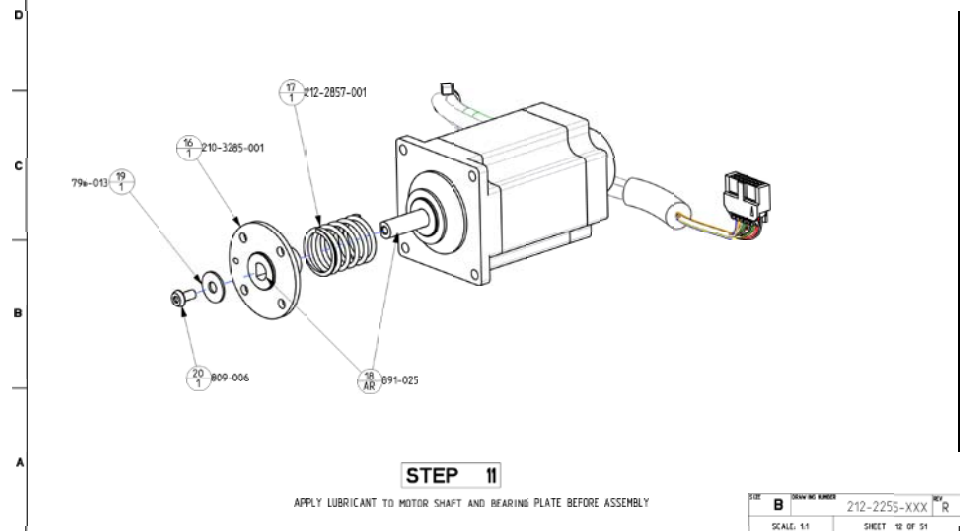
-503 SHOWN



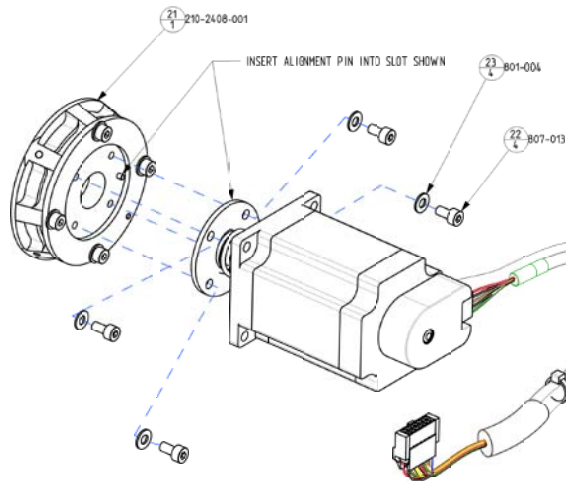
-503 SHOWN



-503 SHOWN



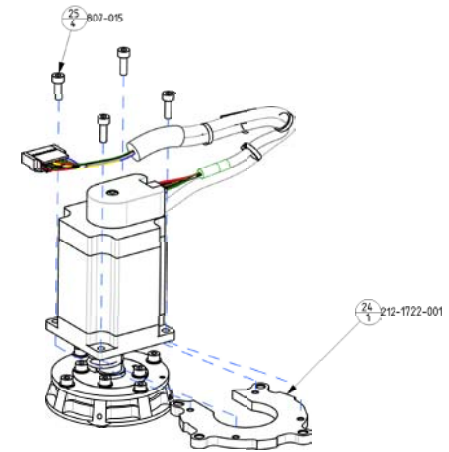
-503 SHOWN



STEP 12

SCALE: 1:1 SHEET 13 OF 31

-503 SHOWN

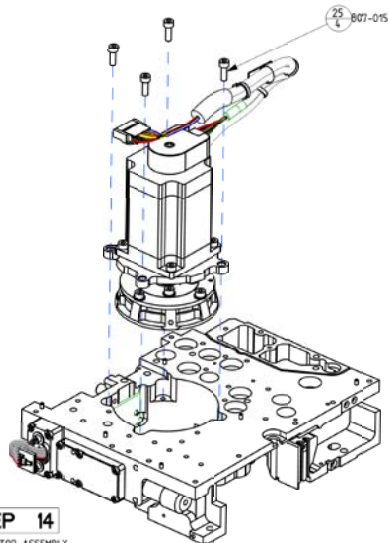


STEP 13

ORIENTATION OF ADAPTER PLATE CRITICAL

SCALE: 3:4 SHEET 14 OF 31

-503 SHOWN

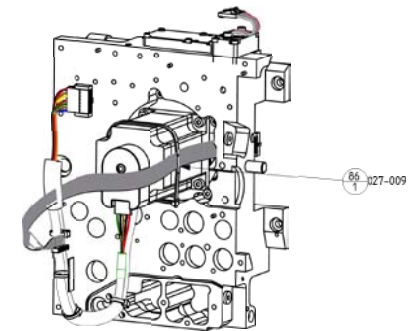


STEP 14

ASSEMBLE MOTOR ASSEMBLY
023-091 CABLE TEMPORARILY HIDDEN

SCALE: 3:5 SHEET 15 OF 31

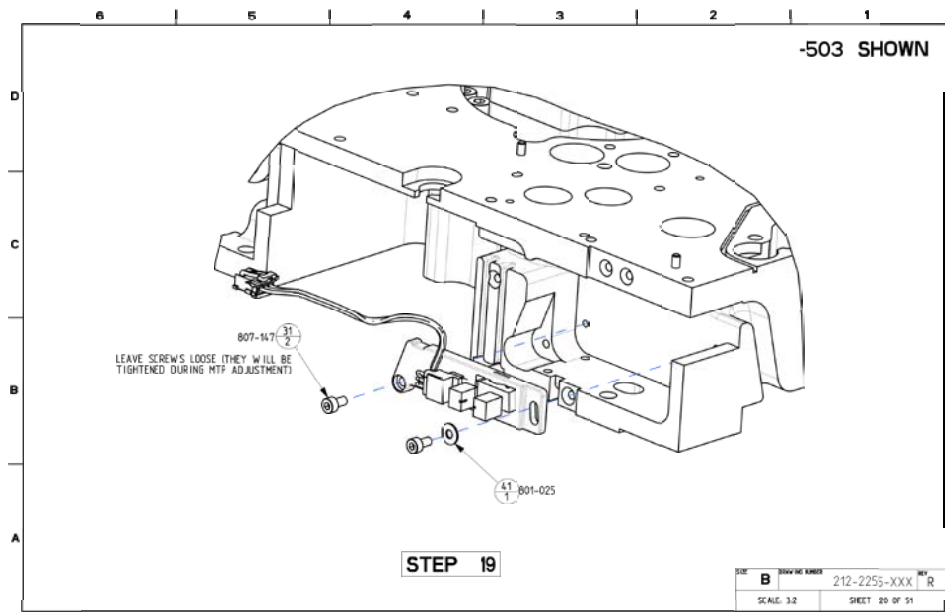
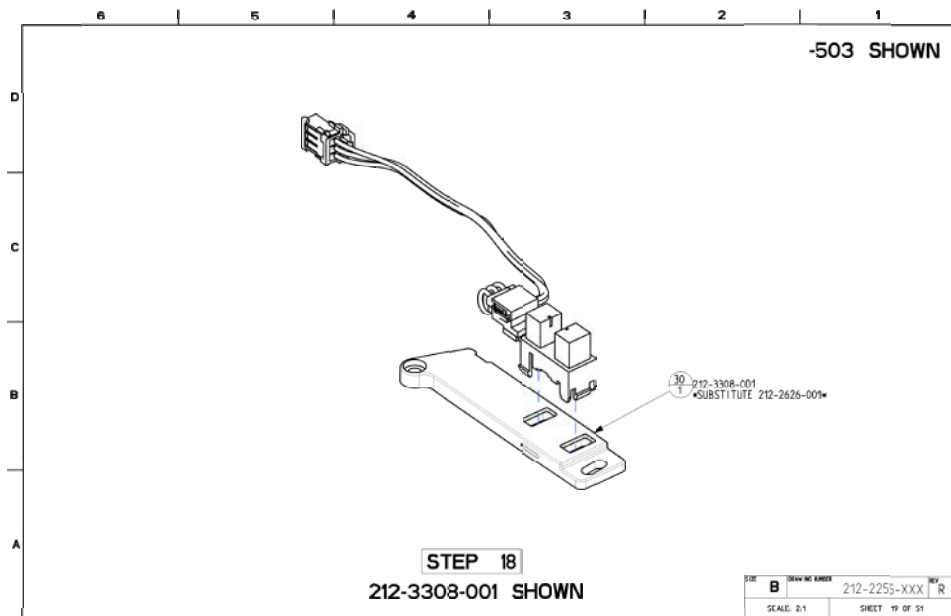
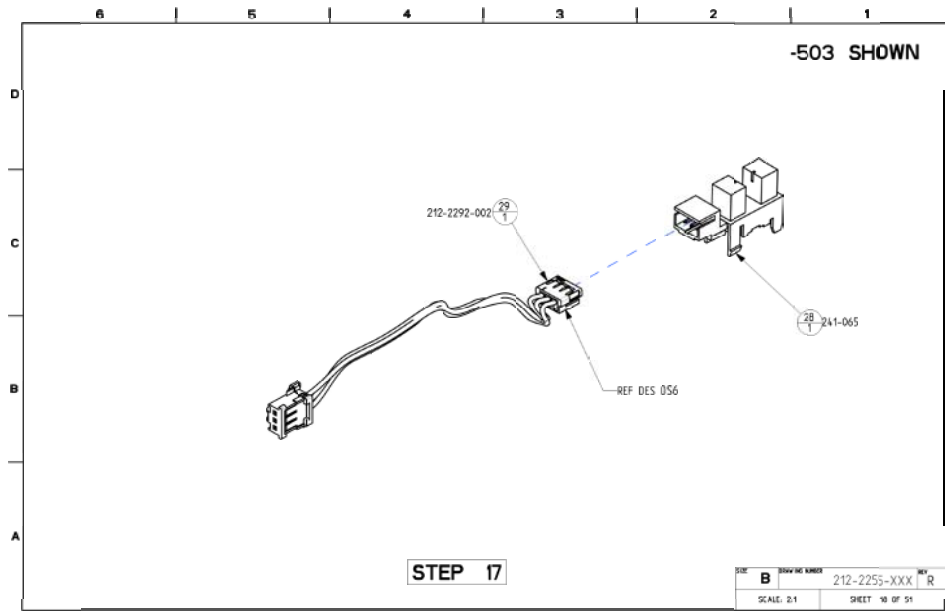
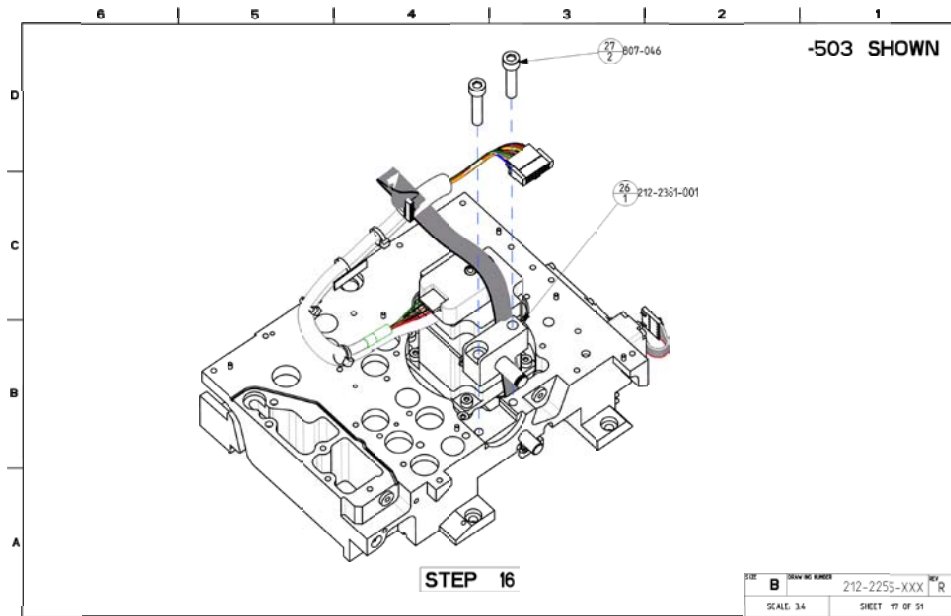
-503 SHOWN



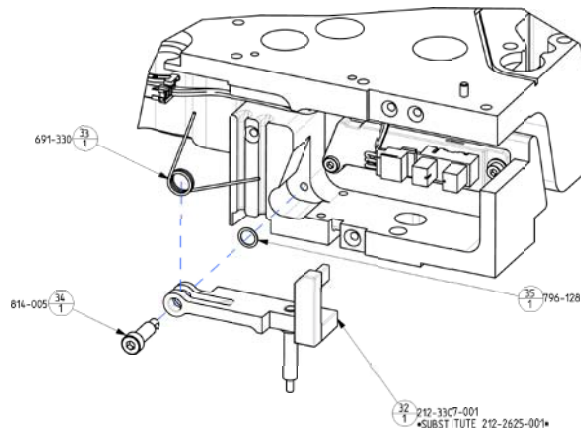
STEP 15

SECURE 023-091 CABLE TO MOTOR USING CABLE TIE.
INSTALL CABLE TIE AT REAR OF MOTOR APPROXIMATELY WHERE SHOWN

SCALE: 3:5 SHEET 16 OF 31



-503 SHOWN

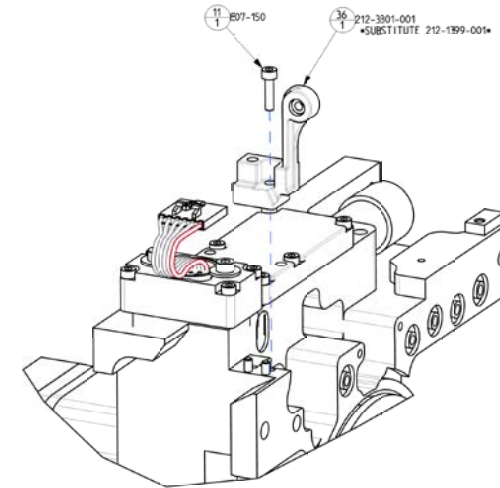


STEP 20

212-3307-001 SHOWN

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	3:2	SHEET	21 OF 51		

-503 SHOWN

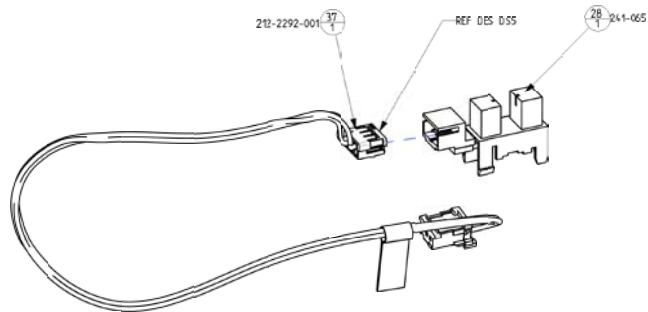


STEP 21

212-3301-001 SHOWN

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	3:2	SHEET	22 OF 51		

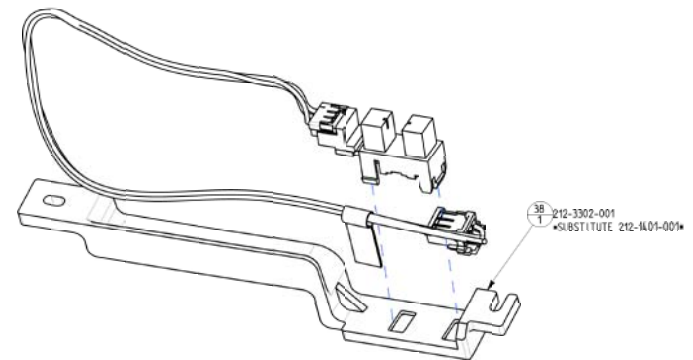
-503 SHOWN



STEP 22

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	2:1	SHEET	23 OF 51		

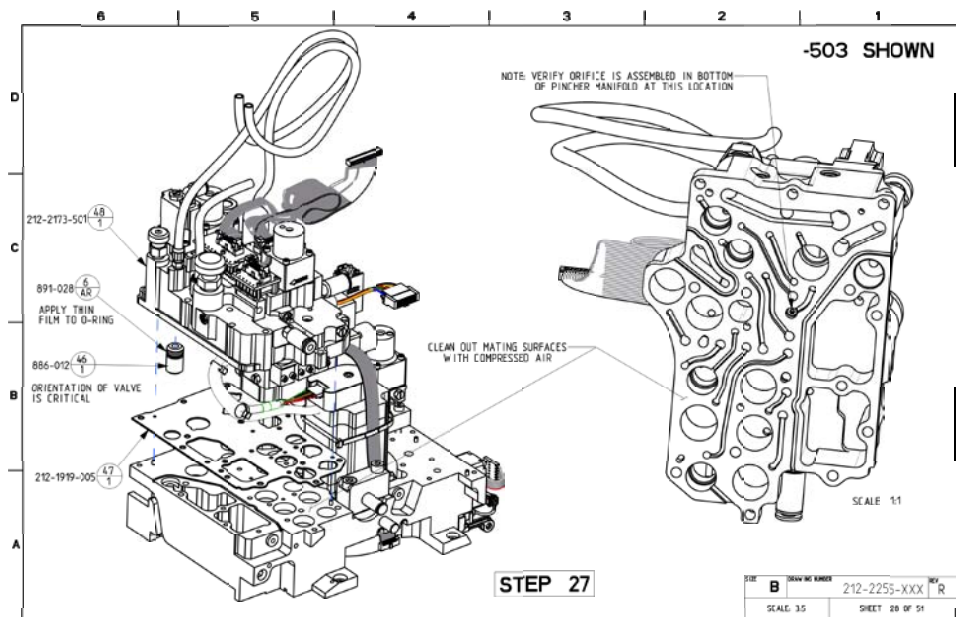
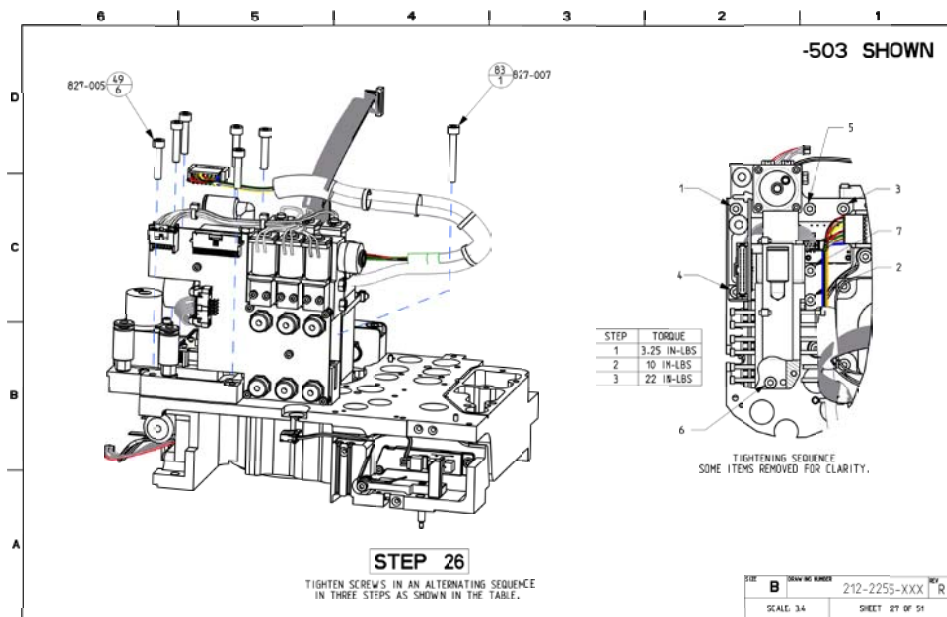
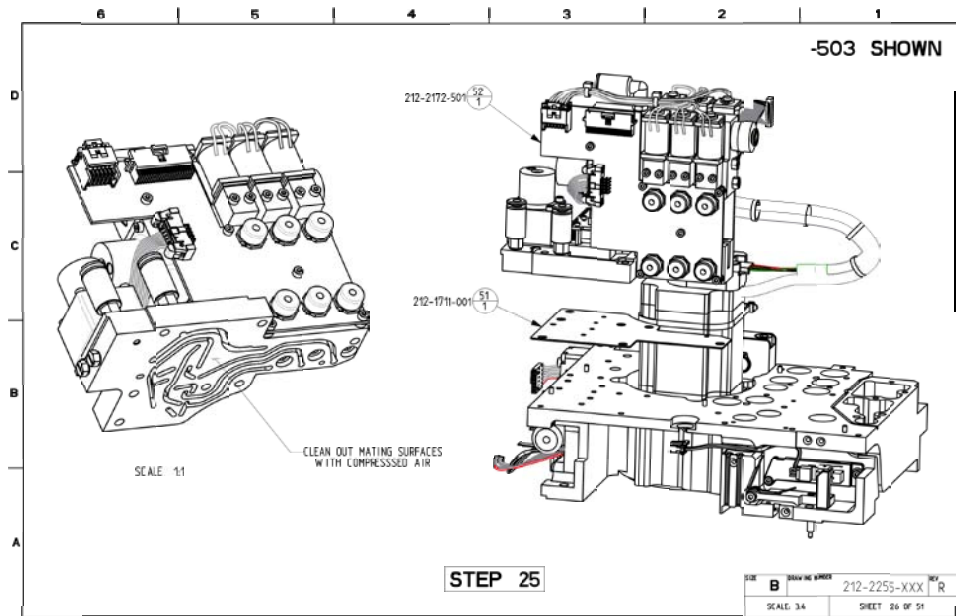
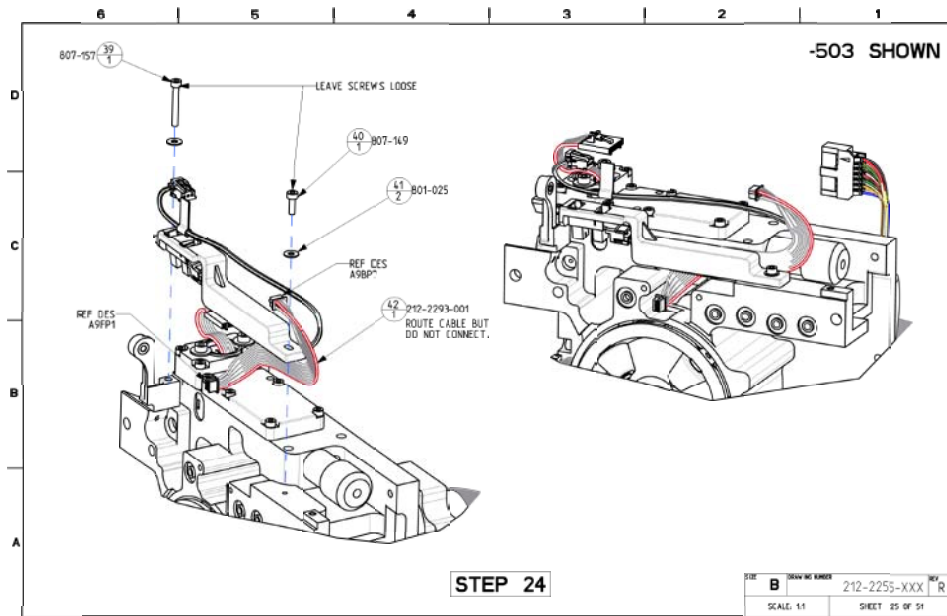
-503 SHOWN

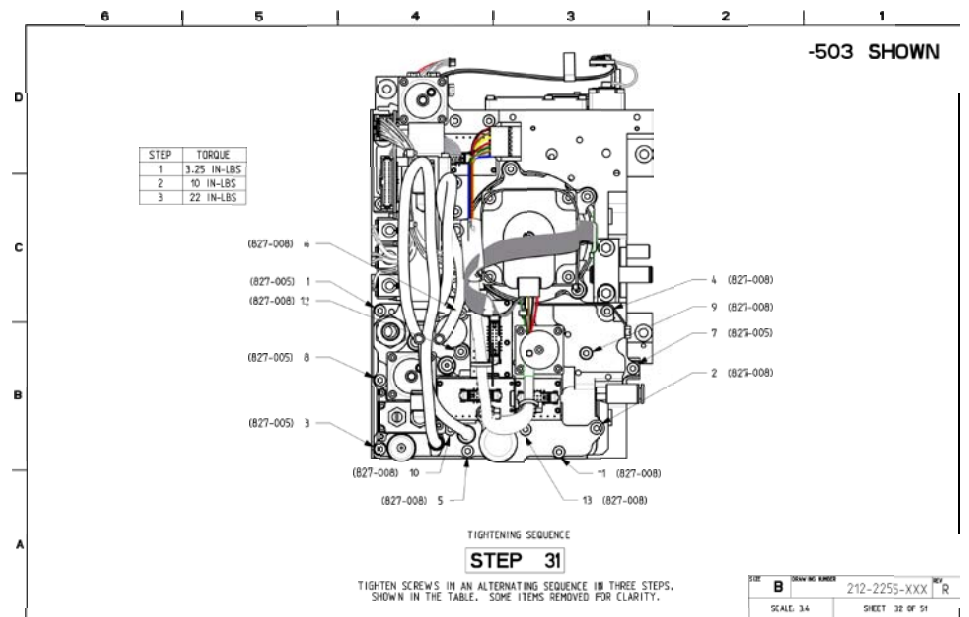
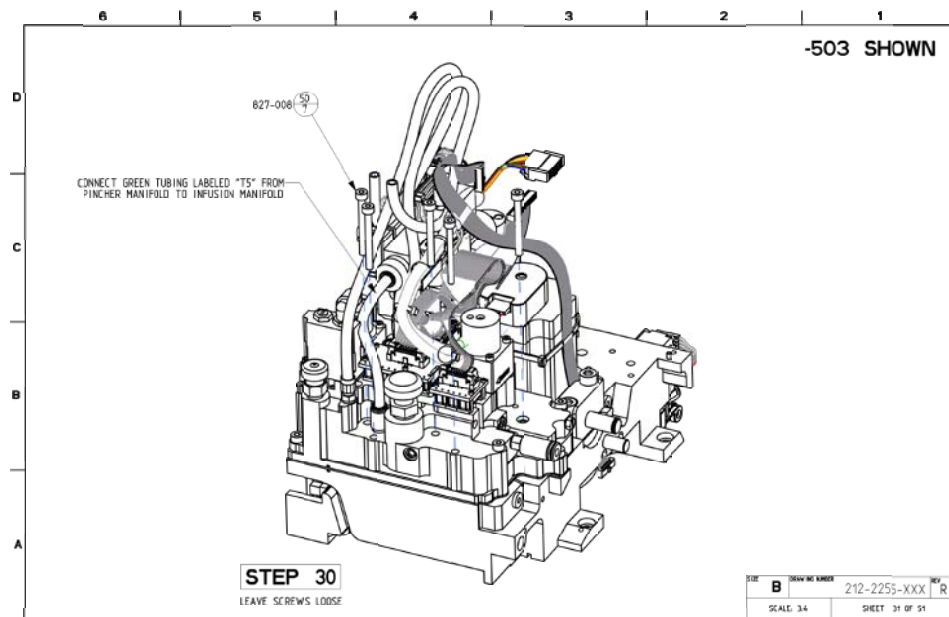
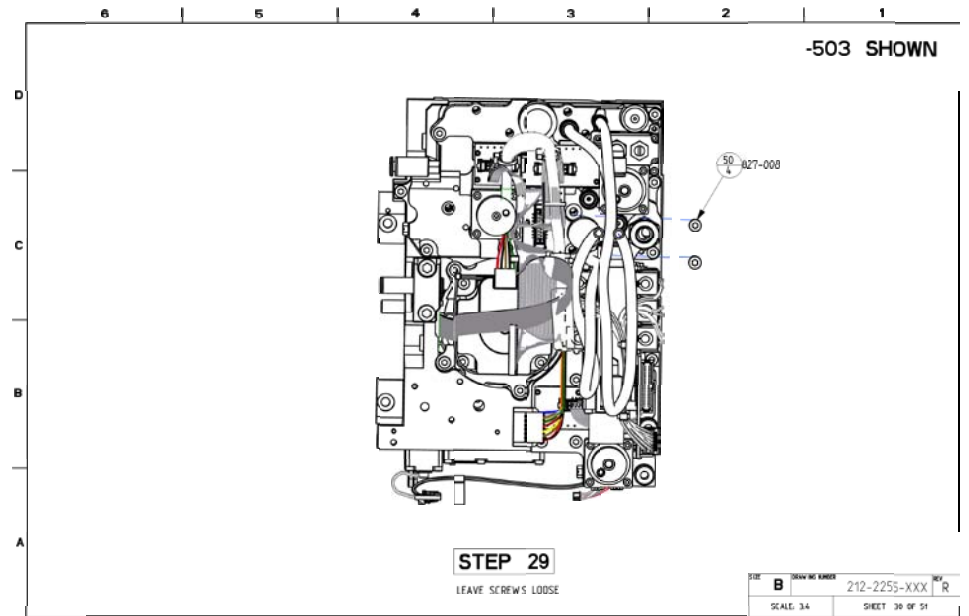
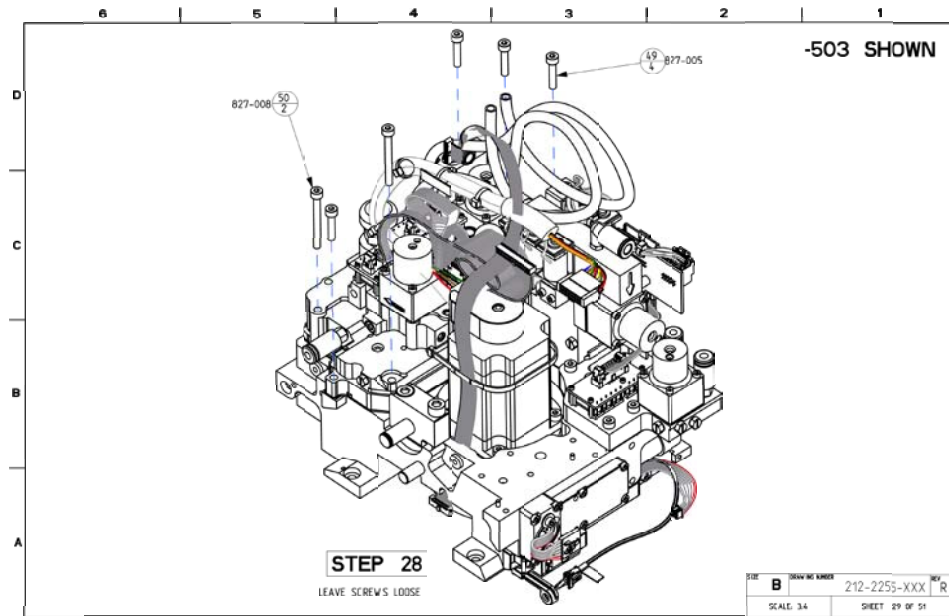


STEP 23

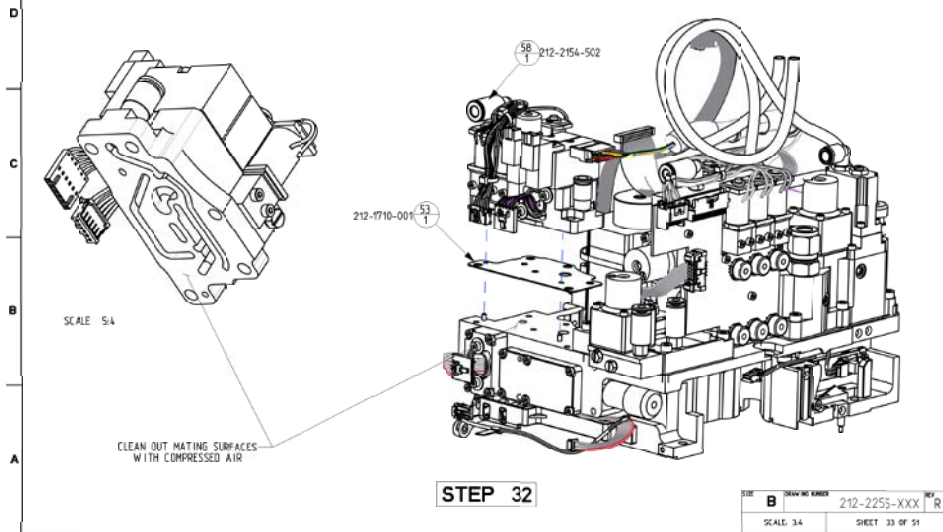
212-3302-001 SHOWN

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	2:1	SHEET	24 OF 51		

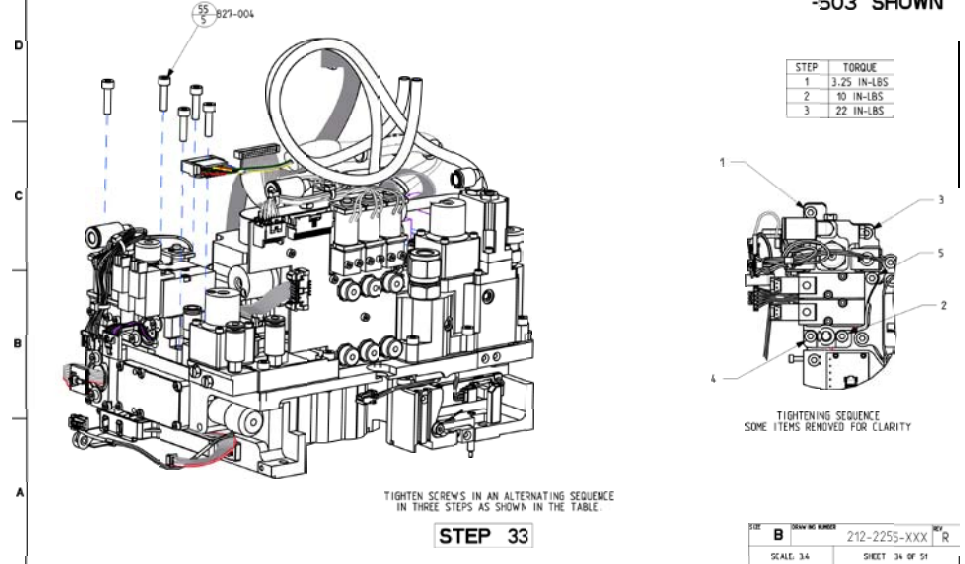




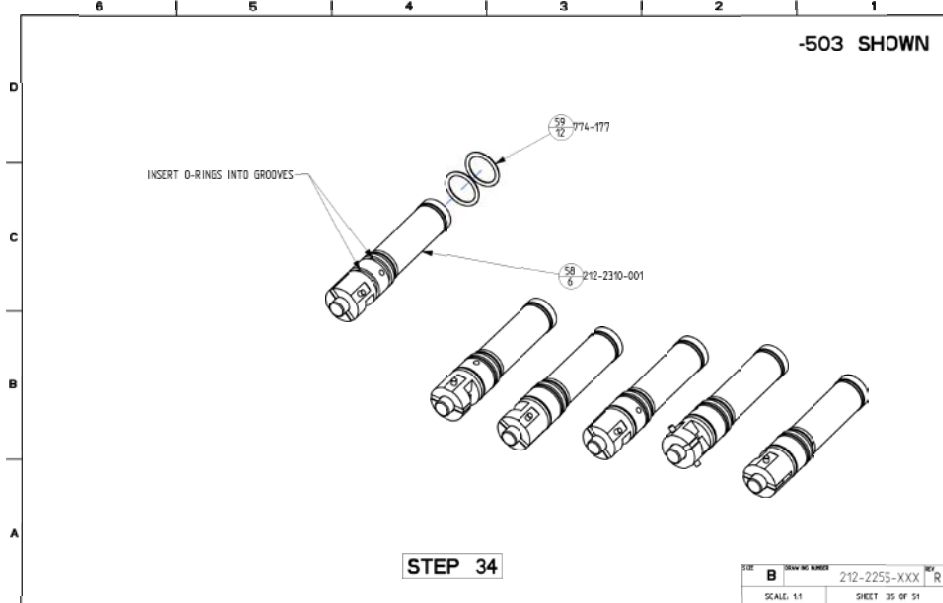
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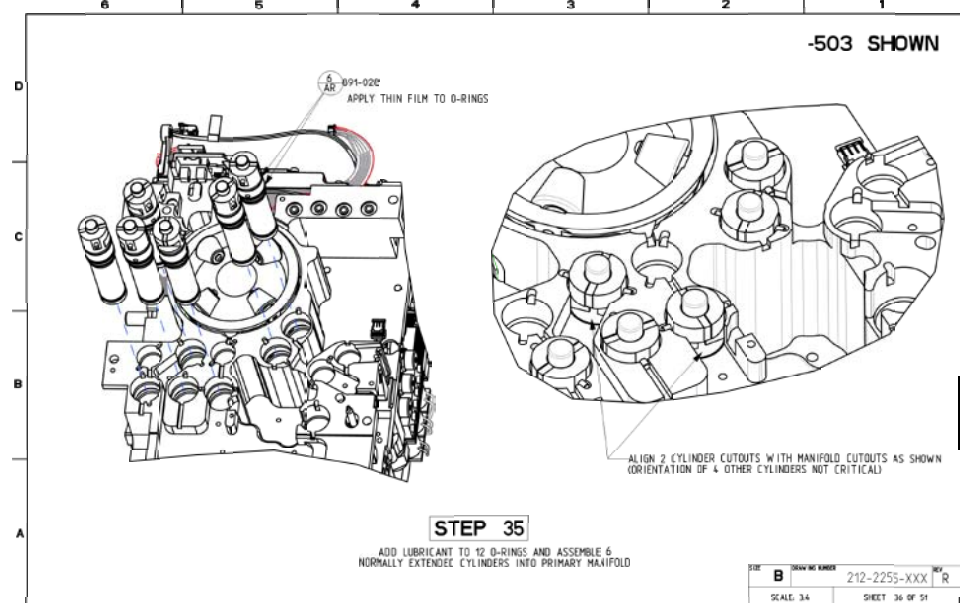
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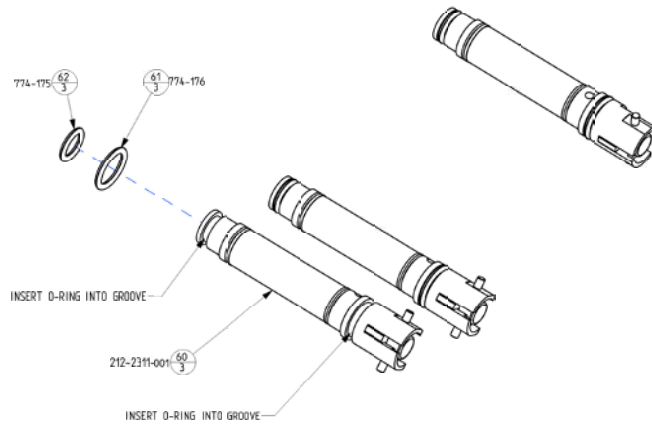
-503 SHOWN



-503 SHOWN



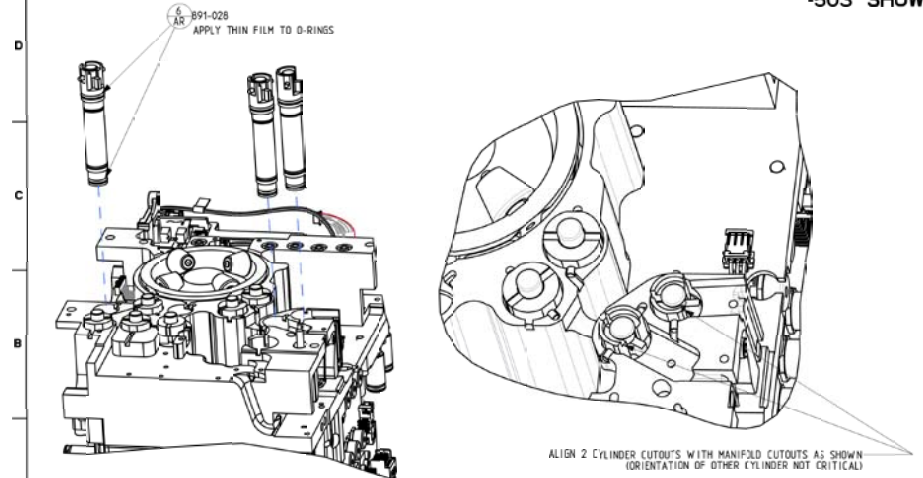
-503 SHOWN



STEP 36

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE	1:1	SHEET	37 OF 51		

-503 SHOWN

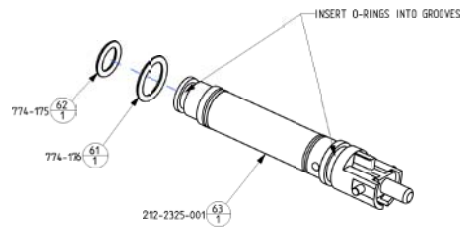


STEP 37

ADD LUBRICANT TO 6 O-RINGS AND ASSEMBLE
3 NORMALLY RETRACTED CYLINDERS INTO PRIMARY MANIFOLD

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE	3:4	SHEET	38 OF 51		

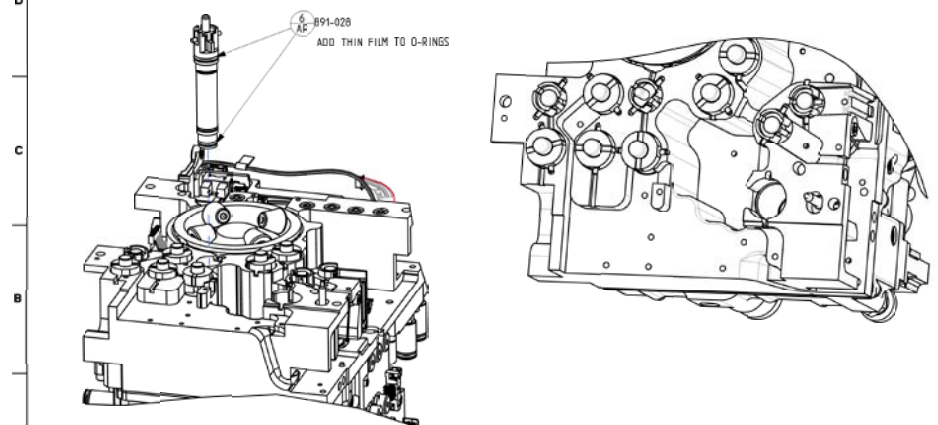
-503 SHOWN



STEP 38

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE	1:1	SHEET	39 OF 51		

-503 SHOWN

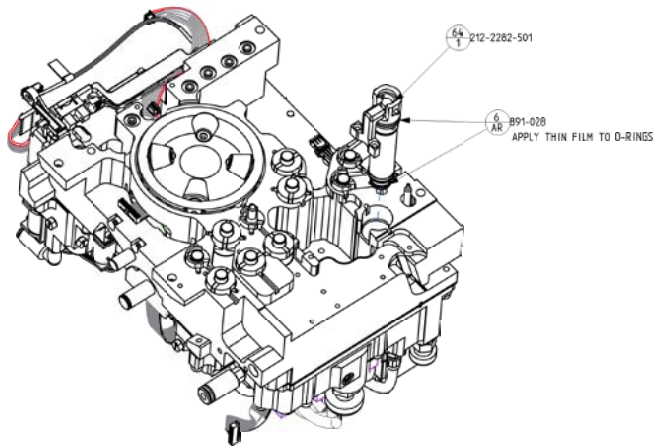


STEP 39

ADD LUBRICANT TO 2 O-RINGS AND ASSEMBLE CYLINDER INTO PRIMARY MANIFOLD

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE	3:4	SHEET	40 OF 51		

-503 SHOWN

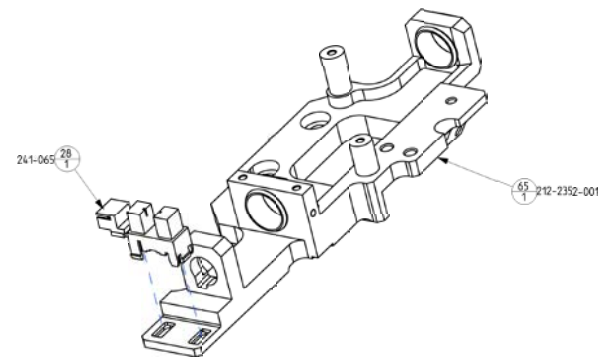


STEP 40

ADD LUBRICANT AROUND FULL CIRCUMFERENCE TO 2 O-RINGS AND ASSEMBLE CYLINDER INTO PRIMARY MANIFOLD

ITEM	B	TRIMMING NUMBER	212-2255-XXXX	REV	R
SCALE:	3:4	SHEET	41 OF 51		

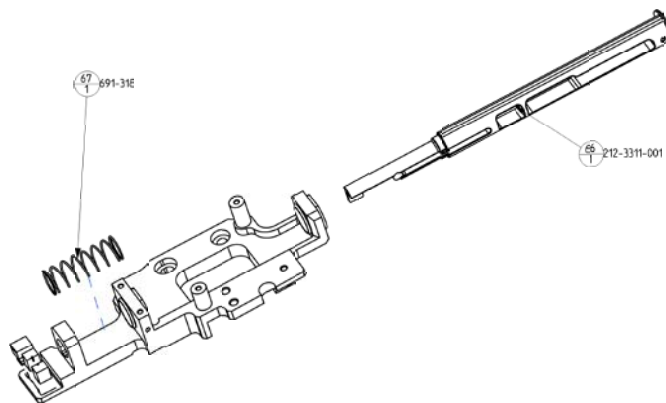
-503 SHOWN



STEP 41

ITEM	B	TRIMMING NUMBER	212-2255-XXXX	REV	R
SCALE:	3:2	SHEET	42 OF 51		

-503 SHOWN

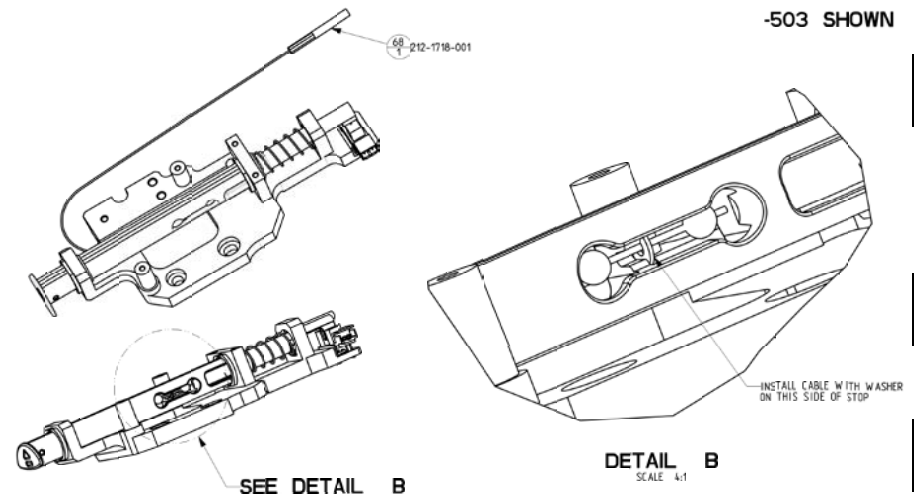


STEP 42

ASSEMBLE SPRING FIRST THEN INSERT ITEM 66 THRU

ITEM	B	TRIMMING NUMBER	212-2255-XXXX	REV	R
SCALE:	1:1	SHEET	43 OF 51		

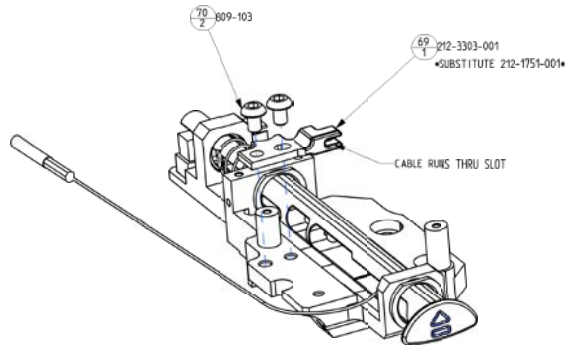
-503 SHOWN



STEP 43

ITEM	B	TRIMMING NUMBER	212-2255-XXXX	REV	R
SCALE:	1:1	SHEET	44 OF 51		

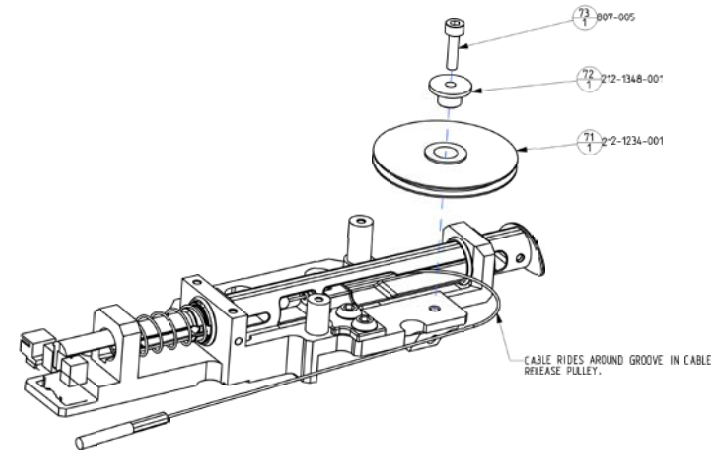
-503 SHOWN



STEP 44

SIZE B DRAWING NUMBER 212-2255-XXX R
SCALE: 3:2 SHEET 45 OF 51

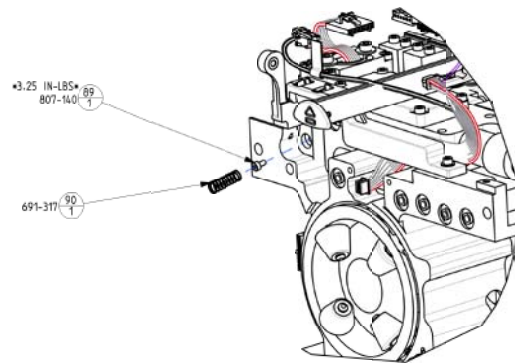
-503 SHOWN



STEP 45

SIZE B DRAWING NUMBER 212-2255-XXX R
SCALE: 3:2 SHEET 46 OF 51

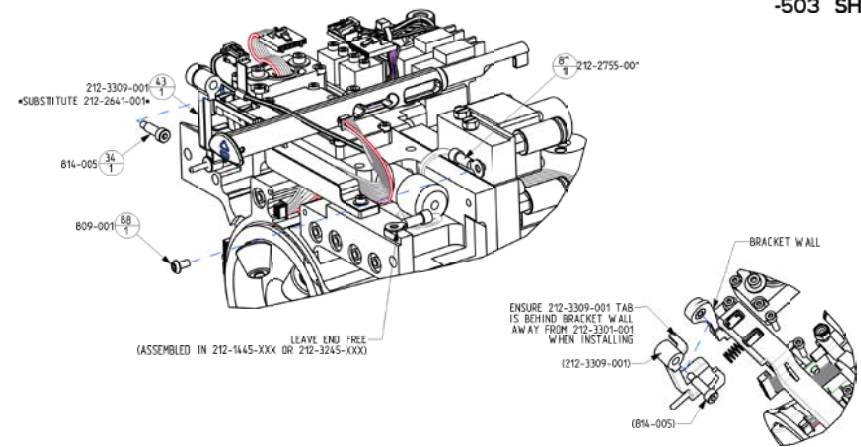
-503 SHOWN



STEP 46

SIZE B DRAWING NUMBER 212-2255-XXX R
SCALE: 1:1 SHEET 47 OF 51

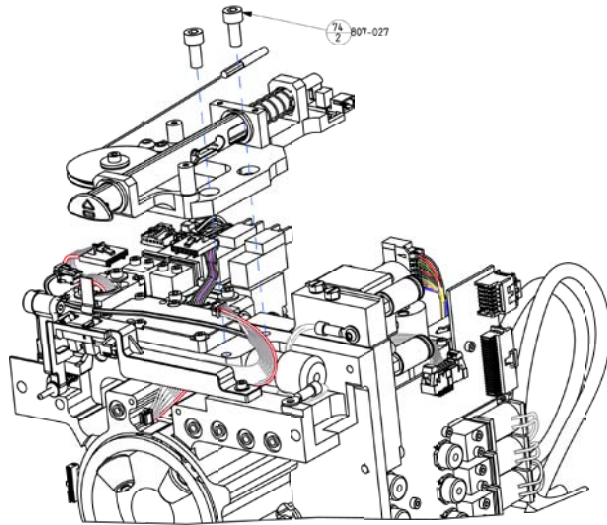
-503 SHOWN



STEP 47

SIZE B DRAWING NUMBER 212-2255-XXX R
SCALE: 1:1 SHEET 48 OF 51

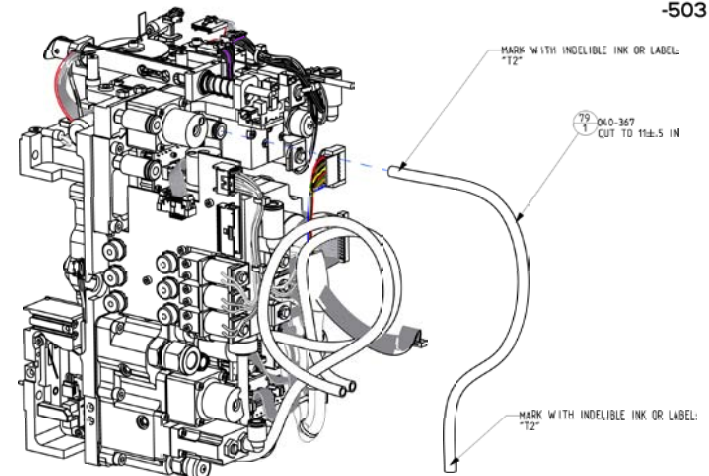
-503 SHOWN



STEP 48

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	1:1	SHEET	49 OF 51		

-503 SHOWN

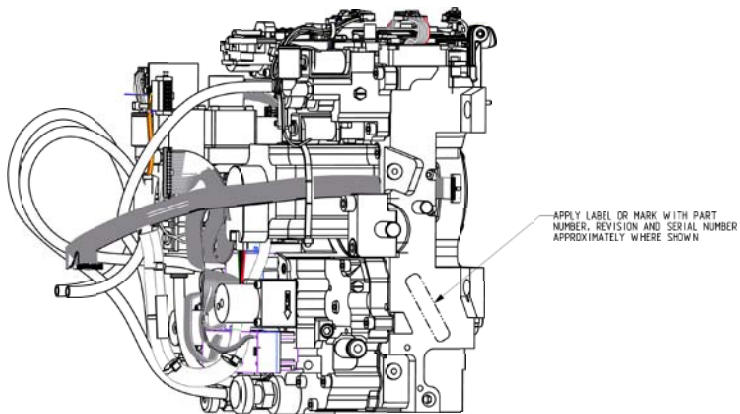


STEP 49

INSTALL TUBING CONNECTING PINCHER MANIFOLD TO ASPIRATION MANIFOLD SHOWN

SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	3:20	SHEET	50 OF 51		

-503 SHOWN



SIZE	B	DRAWING NUMBER	212-2255-XXX	REV	R
SCALE:	3:20	SHEET	51 OF 51		

212-2173-501 ASSY, MANIFOLD, PINCHER

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1891-001	MANIFOLD,PINCHER	1
002	805-421	ORIFICE,.0051IN,M5X6.0	1
003	655-049	PLUG,HEX SKT,1/16NPT X 5/32HEX	8
004	655-048	PLUG,10-32 THD,BRASS	4
005	895-345	MUFFLER,.750ODX1.625,.25 NPTS	1
006	774-186	O-RING,.062IDX.188OD,VITON	10
007	774-187	O-RING,.380IDX.500D,VITON	1
008	774-188	O-RING,.437IDX.562OD,VITON	1
009	807-150	SCREW,CAP HD SKT,M2.5X10 SST	7
010	212-2572-001	MANIFOLD,BOOSTER,NIFS	1
011	775-028	GASKET,SEAL,X-VALVE MANIFOLD	13
012	807-179	SCREW,CAP HD SKT,M1.6X0.35 SST	16
013	212-2785-551	ASSY,PCB,5 VALVE,YELLOW	1
014	893-753	FITTING,ELBOW,.12NPT X.25 TUBE	1
015	895-343	REGULATOR,W/O MANF,120PSIG	1
016	827-003	SCREW,CAP HD,M2.5X0.45X12 W/CT	4
017	212-2534-551	ASSY,PCB,3 VALVE,BLUE	1
018	212-2786-551	ASSY,PCB,5 VALVE RED	1
019	893-629	FITTING,BARB,10-32 EXT THD BRS	2
020	895-344	REGULATOR,PRESSURE,45PSI MM	1
021	807-178	SCREW,CAP HD SKT,M2.5X28 SST	8
022	886-042	VALVE,RELIEF,10 PSI MM PRESET	1
023	893-737	FITTING,.250DX10-32,UNF	3
024	893-636	FITTING,COMPRESS,3/8X9/16-18	1
025	892-355	ADHESIVE,SEALANT,LOCTITE 51604	AR
026	886-040	VALVE,RELIEF,95 PSIG .125 ALUM	1
027	886-048	VALVE,RELIEF,55 PSIG .25 ALUM	1
028	893-529	FITTING,STR,M5X0.8 6MM TUBE	1
029	893-630	FITTING,CLAMP,TUBE .281 ID BRS	2
030	043-032	TUBING,POLY,.170IDX.250OD CLR	3
031	040-368	TUBING,PEU,.125X.250OD GREEN	0.5
032	212-2288-001	CABLE ASSY,X-VALVE,W90	1

AR = As Required

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. -SXXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF THE -SXX SERIES P/N.
5. * XX IN LBS * - INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE +/- 10% OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
6. BUILD PER 992-2120-001.

REVISION HISTORY

REV	ECN	DATE
P12	NOT RELEASED	03/21/06
A	20000900	03/25/06
B	20081369	05/22/08
C	20082040	08/08/08
D	20100969	06/18/10
E	CN046470ECN	08/13/13
F	CN048203ECN	09/19/13
G	CN054156ECN	04/07/14
H	CN056784ECN	07/29/14

TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-2173-501	ASSY,MANIFOLD,PINCHER	212-2173-501S	H	ASSY,MANIFOLD,PINCHER SERVICE

SEE SEPARATE PARTS LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BY J. ATHERLEY	DATE 03/03/06	<p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION. IT IS TO BE RELEASED TO OTHERS ONLY BY AUTHORIZATION OF THE COMPANY. IT IS TO BE DESTROYED BY THE USER WHEN NO LONGER NEEDED. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.</p> <p>ALCON Orion, California 92688</p>		
DESIGNED BY N. KING	DATE 5/11/06			
APPROVED BY A. HAHN	DATE 5/11/06			
ISSUED BY 2/23/2007				
POME INK MODEL ATTRIBUTES		NAME: 212-2173-501.PDOC		VERSION: H.2

ASSY,MANIFOLD,PINCHER

ITEM B DRAWING NUMBER 212-2173-XXX REV H

SCALE: 1:1 SHEET 1 OF 10

STEP 1

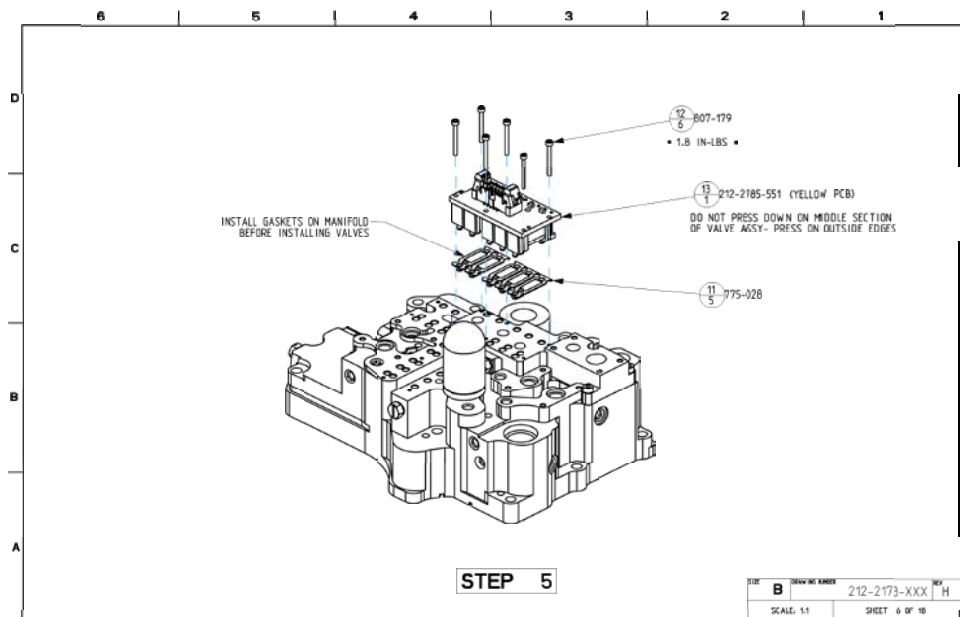
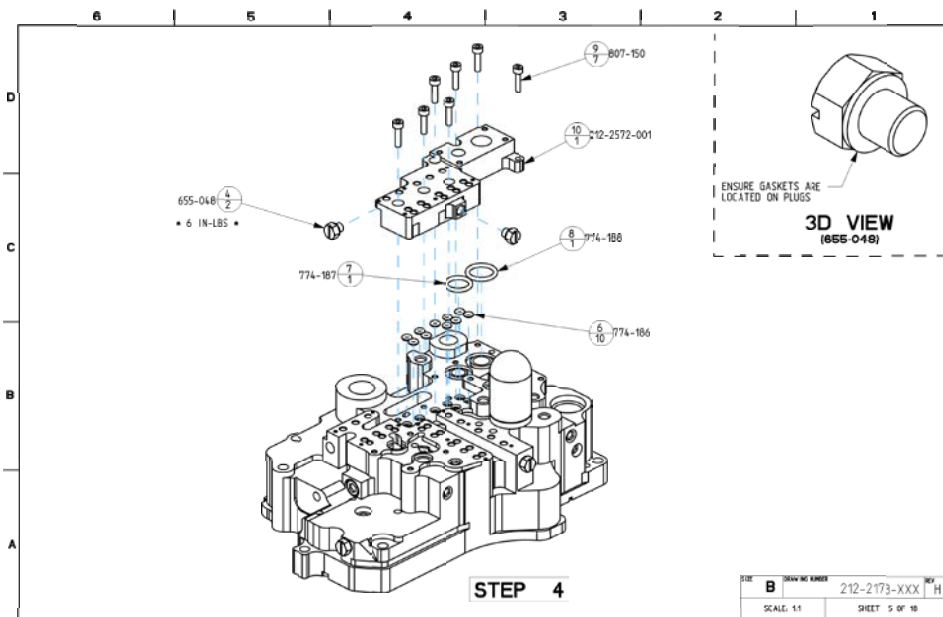
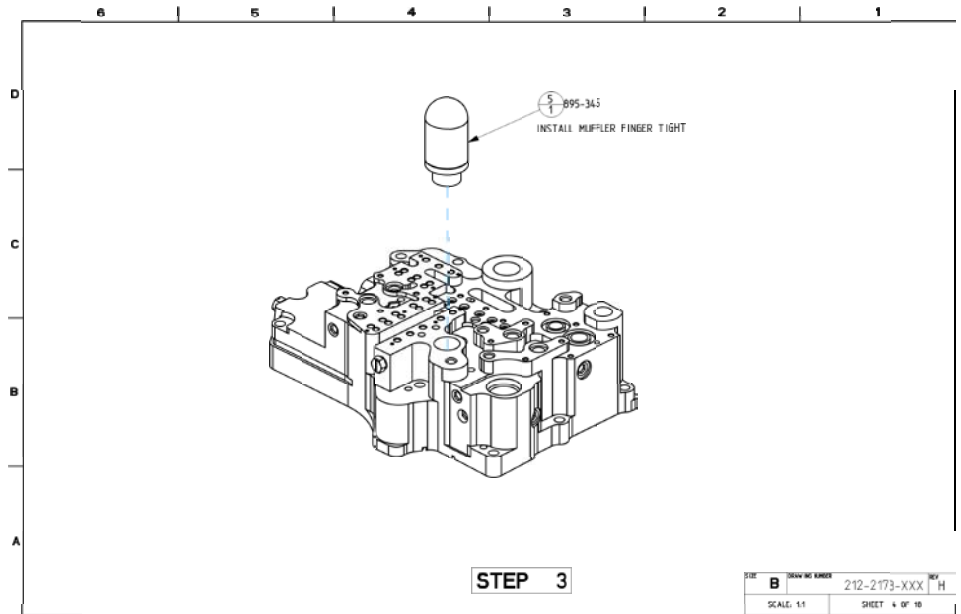
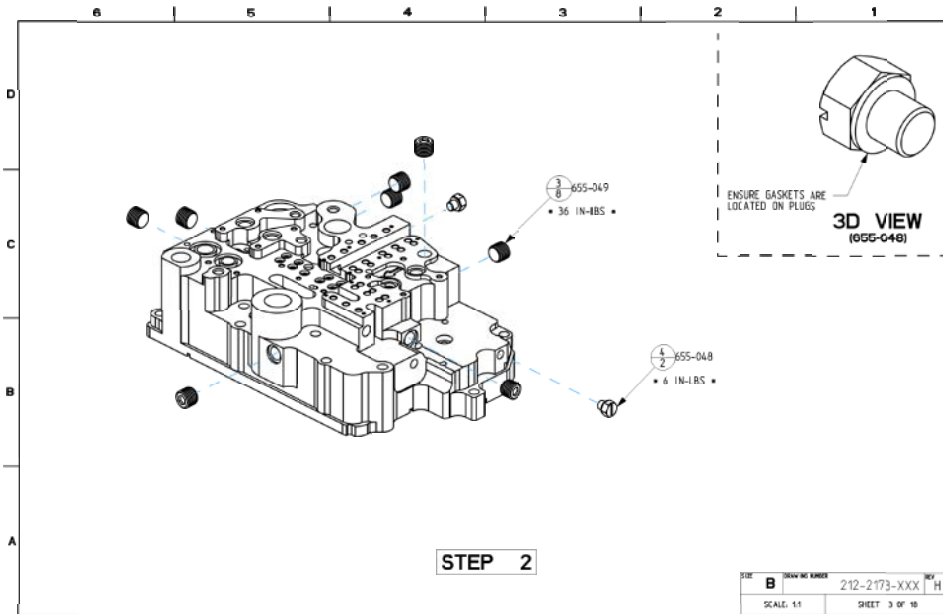
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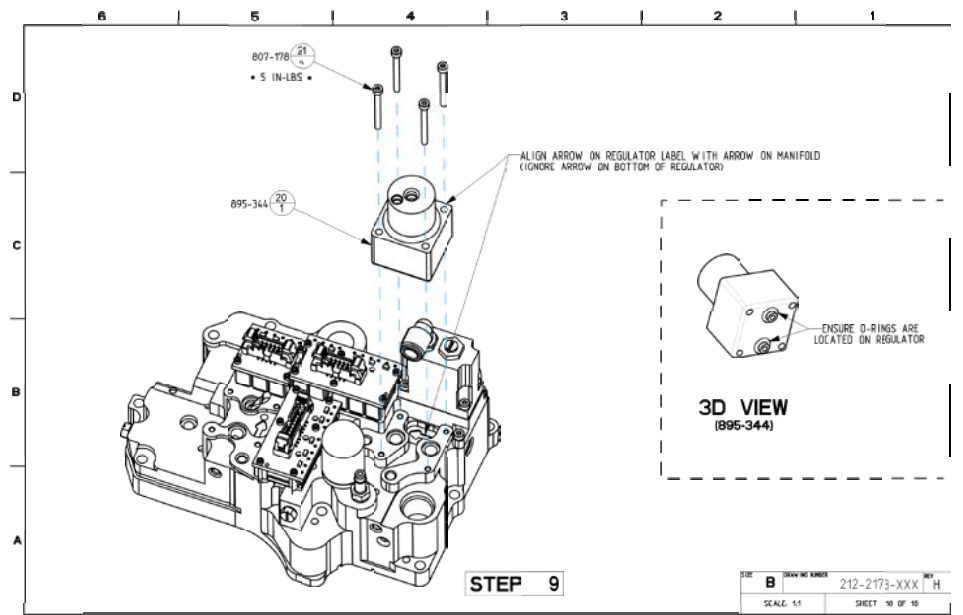
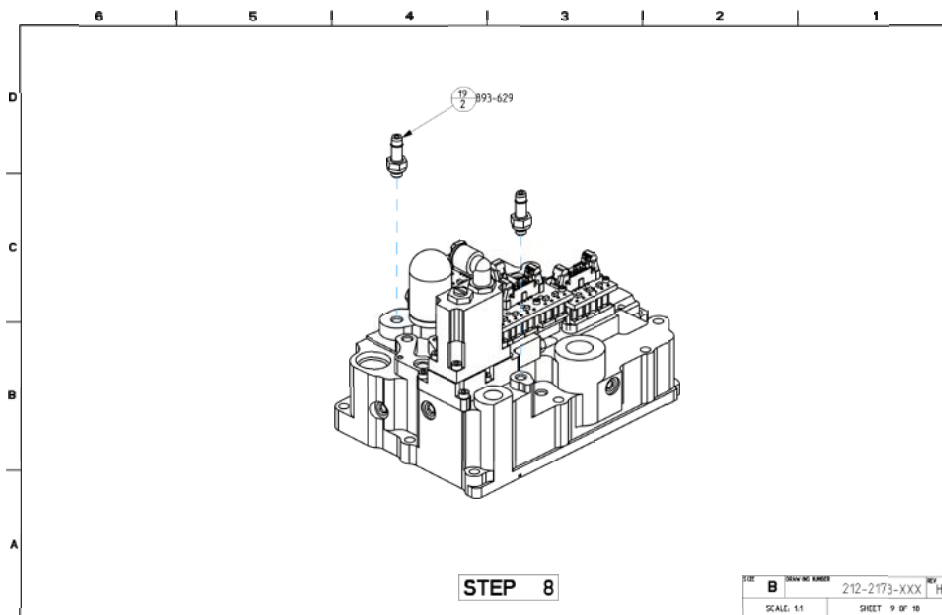
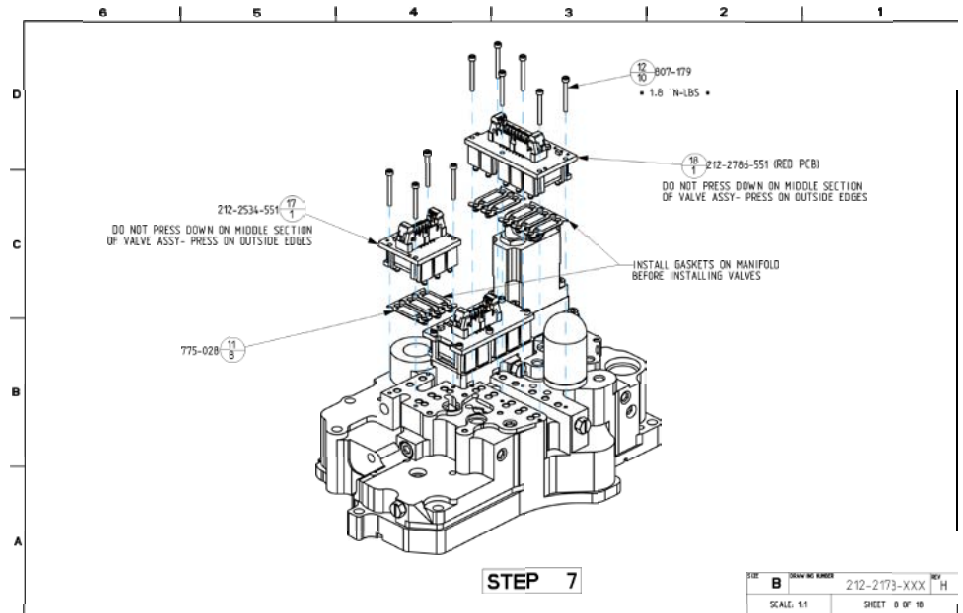
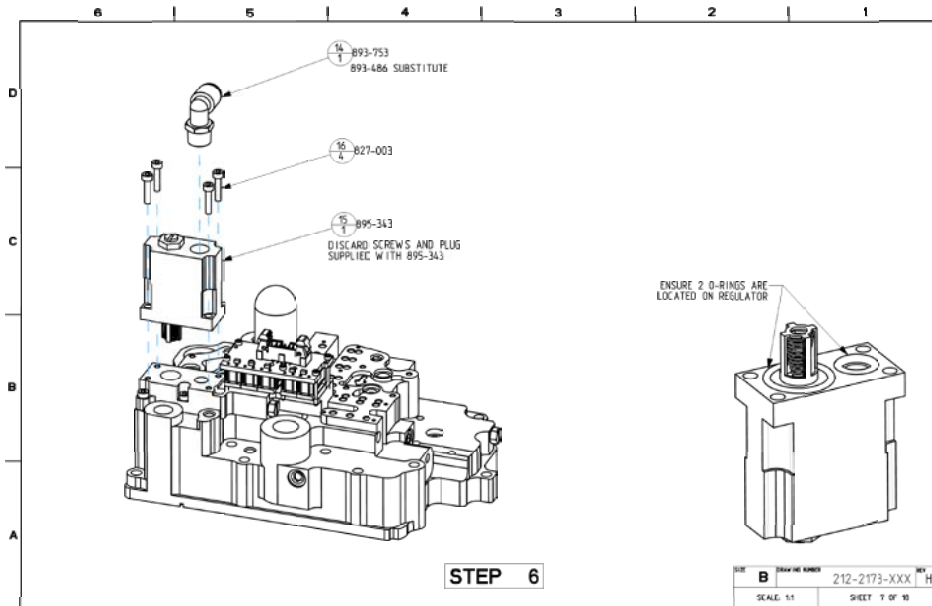
ITEM B DRAWING NUMBER 212-2173-XXX REV H

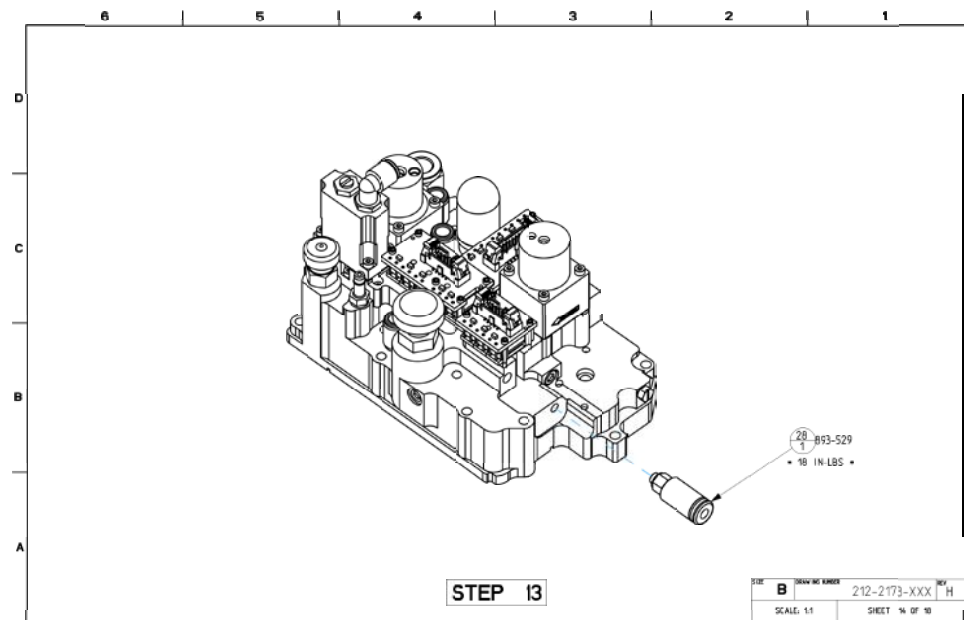
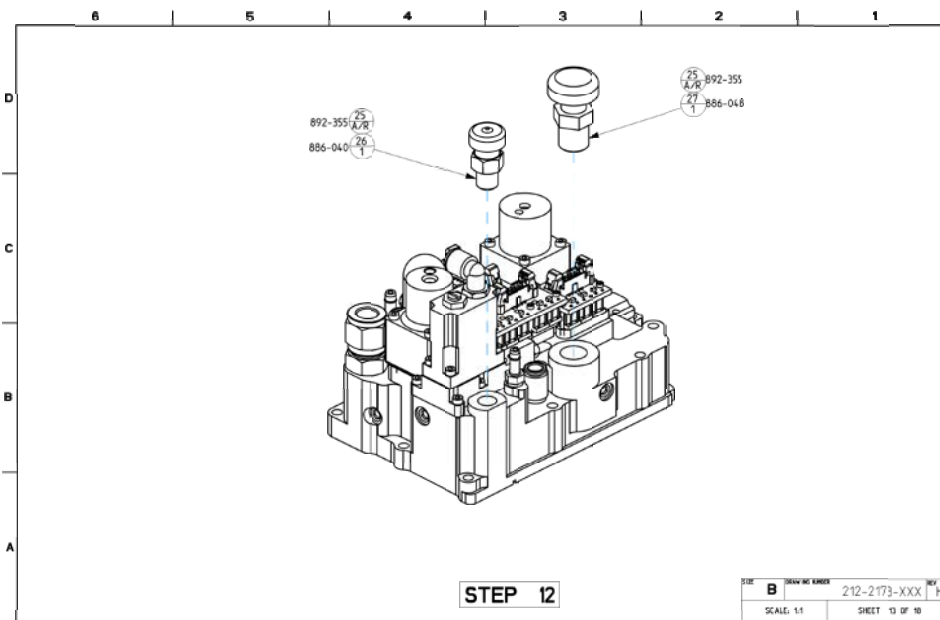
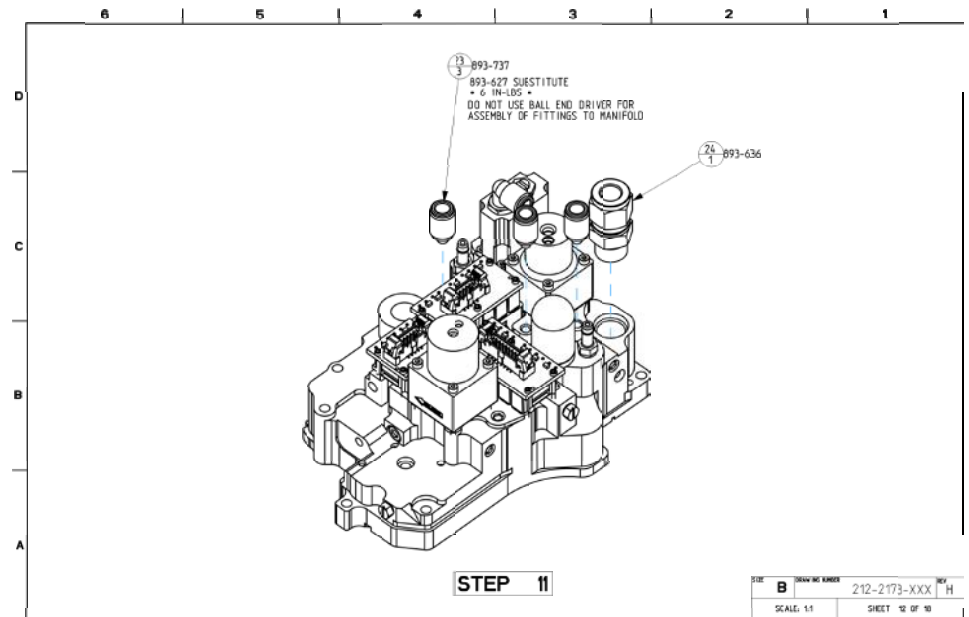
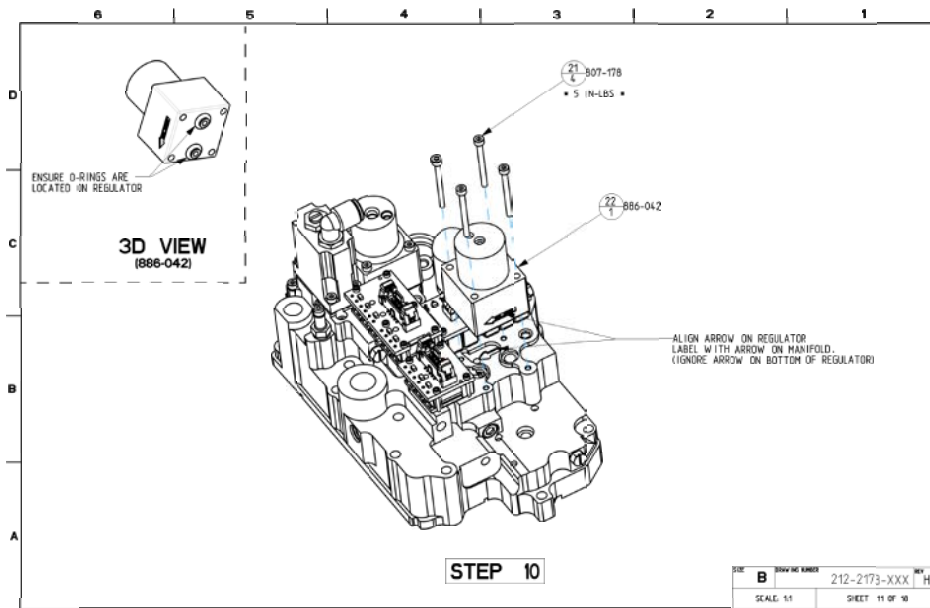
SCALE: 1:1 SHEET 2 OF 10

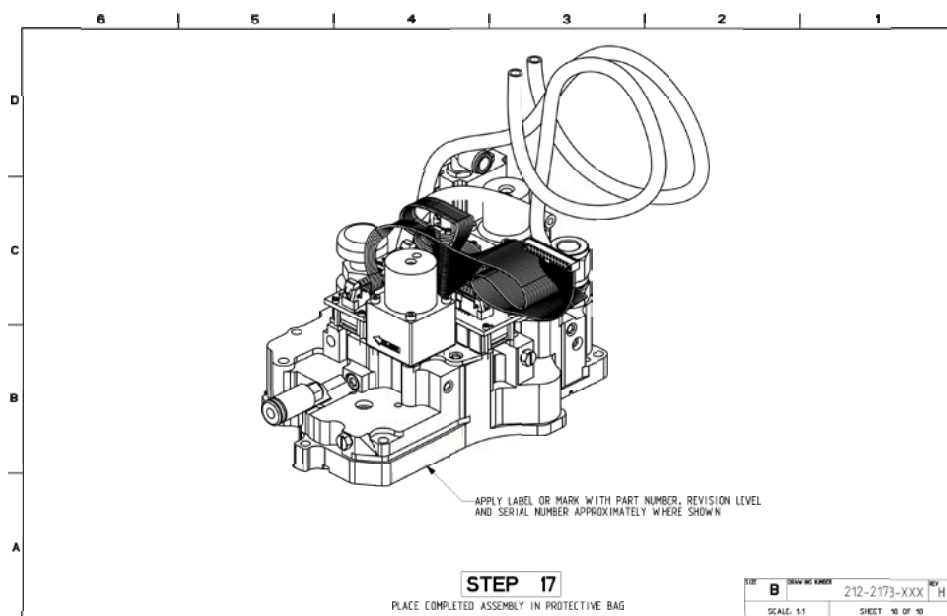
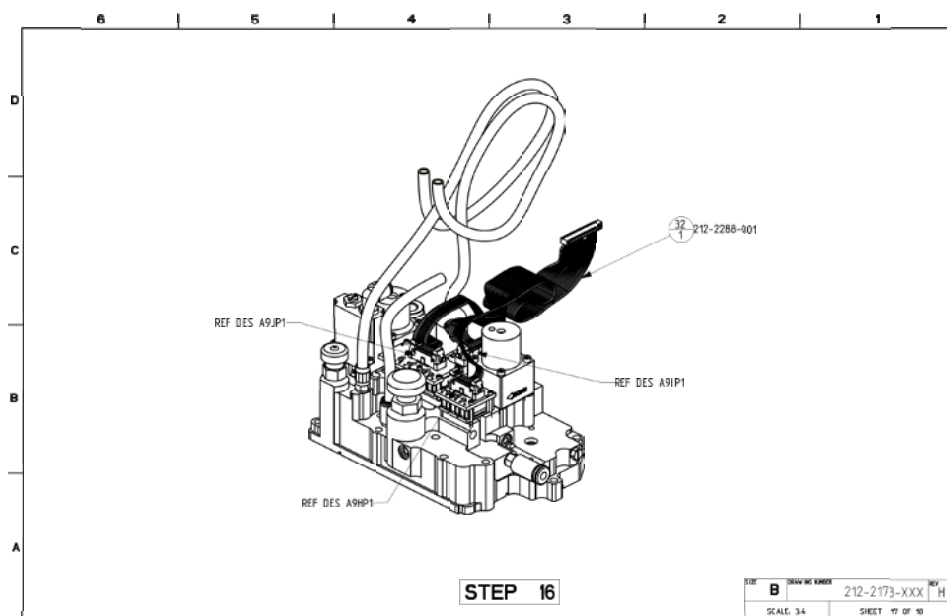
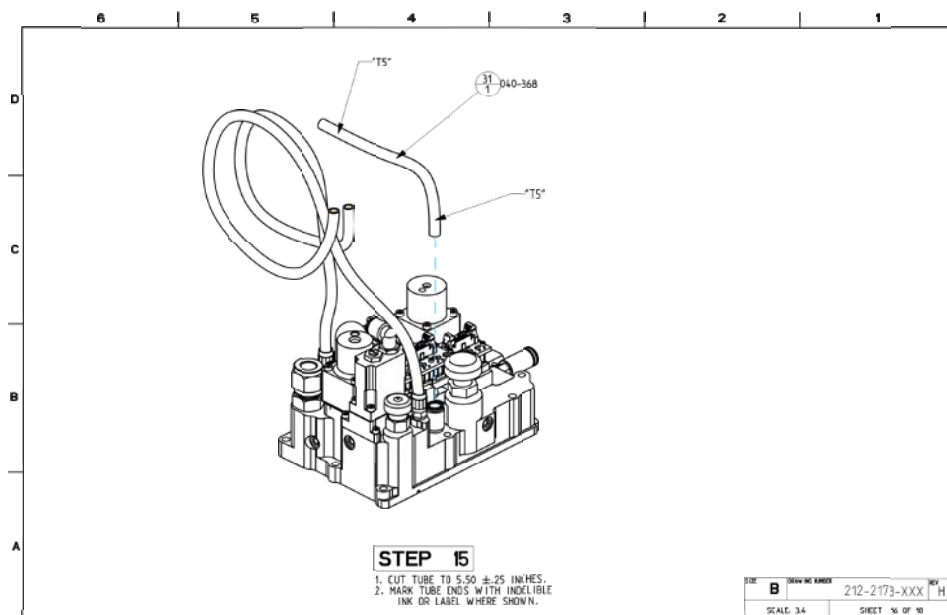
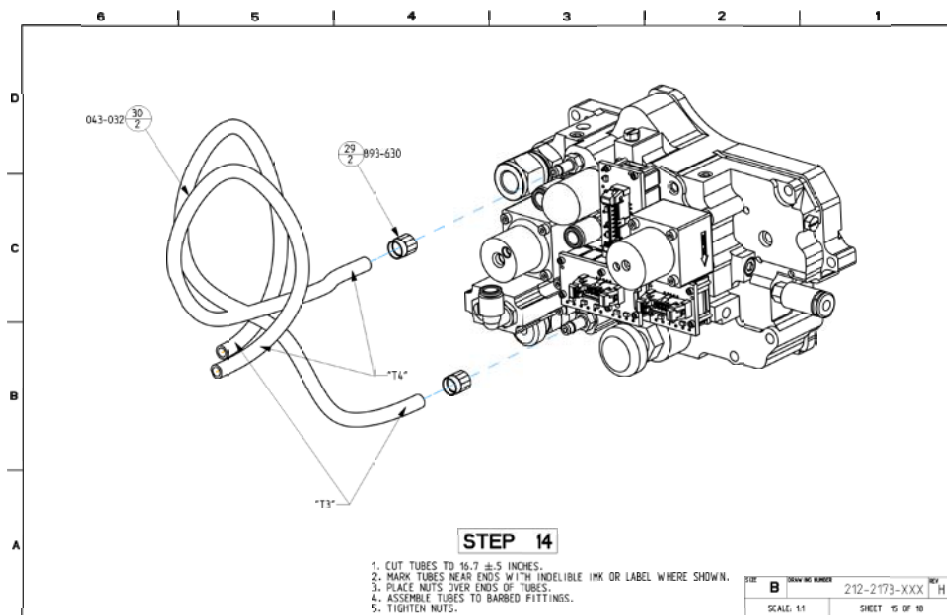
805-421
DRIVE ORIFICE TO BOTTOM OF HOLE

212-1891-001









212-2172-501 ASSY, MANIFOLD, INFUSION

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-1599-001	MANIFOLD,INFUSION,LOWER	1
2	655-048	PLUG,10-32 THD,BRASS	6
3	893-529	FITTING,STR,M5X0.8 6MM TUBE	2
4	212-1600-001	MANIFOLD,INFUSION,UPPER	1
5	893-738	FITTING,SOCKET,HEX MALE .37NPT	1
6	807-178	SCREW,CAP HD SKT,M2.5X28 SST	8
7	895-353	REGULATOR,3.8PSI,MM LO/RES NO	1
8	895-352	REGULATOR,.58PSI,MM LO/RES NO	1
9	775-028	GASKET,SEAL,X-VALVE MANIFOLD	5
10	212-2787-551	ASSY,PCB,5 VALVE,BLUE	1
11	807-179	SCREW,CAP HD SKT,M1.6X0.35 SST	6
12	774-173	O-RING,.114X.070,VITON	24
13	827-004	SCREW,CAP HD,M4X.7X16 SST W/CT	3
14	807-152	SCREW,CAP HD SKT,M2.5X16 SST	12
15	212-2632-001	CABLE ASSY,PROP VALVE,3S	3
16	212-2634-001	CABLE ASSY,PROP VALVE,LW	3
17	891-028	LUBRICANT,GREASE,HIGH-VACUUM	AR
18	212-1472-551	ASSY,PCB,FLUIDICS INFUSION	1
19	212-2239-001	SPACER,SENSOR,INFUSION	6
20	807-148	SCREW,CAP HD SKT,M2.5X6 SST	6
21	023-095	CABLE,FLAT,2MM IDC SOCKET	1
22	027-003	CABLE TIE,.625X3.50L,NYLON	2
23	051-040	CONNECTOR,12P,2MM DBL ROW P LK	1
24	893-647	FITTING,M5X.8,6MM R ANGLE TUBE	1
AR = As Required			

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (100) ON TOP AND QUANTITY (1) ON BOTTOM.
4. -SXXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF THE -SXX SERIES P/N.
5. • XX IN-LBS • - INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE +/- 10% OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
6. BUILD PER MAP 992-2'20-001.

REVISION HISTORY

REV	ECN	DATE
P16	NOT RELEASED	03/21/08
A	20080900	03/25/08
B	20081995	08/07/08
C	20082269	08/26/08
D	20101061	07/09/10
E	2023048ECN	10/14/11
F	2046470ECN	10/13/13
G	2048203ECN	09/20/13
H	2054875ECN	04/25/14
J	2056135ECN	06/12/14

TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER (L)	REV	DESCRIPTION
212-2172-101	ASSY,MANIFOLD,INFUSION	212-2172-501S	J	ASSY,MANIFOLD,INFUSION SERVICE

SEE SEPARATE PARTS LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	212-2172-501	ASSY,MANIFOLD,INFUSION		

APPROVED

BY	DATE	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION IN WRITING FROM ALCON.	DESCRIPTION
J. ATHERLEY	7/2/06		ASSY,MANIFOLD,INFUSION
J. CHUM	7/2/06		
A. HAHN	7/2/06		
DATE	2/23/2007		

POM INK MODEL ATTRIBUTES NAME: 212-2172-501.PDF VERSION: 1.2

STEP 1

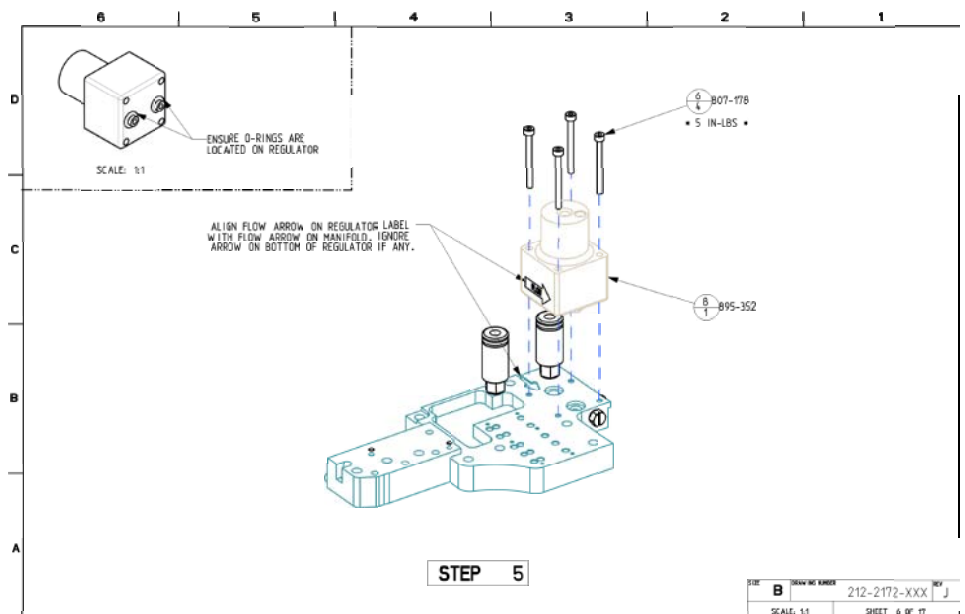
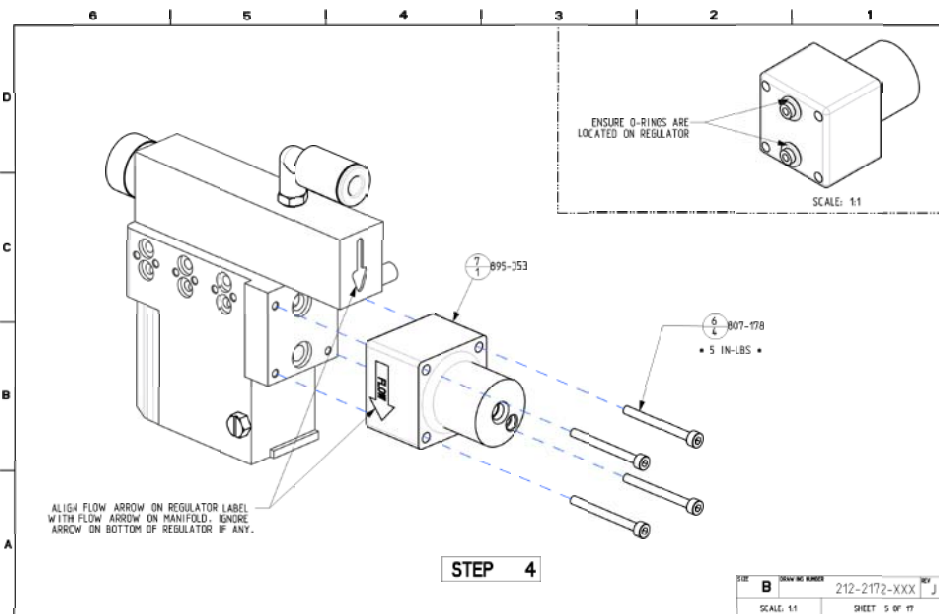
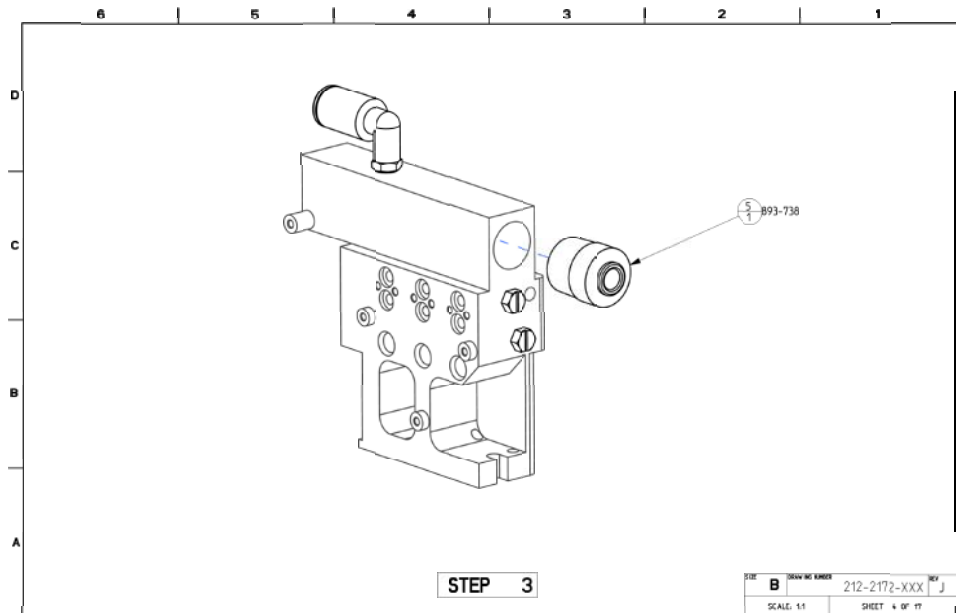
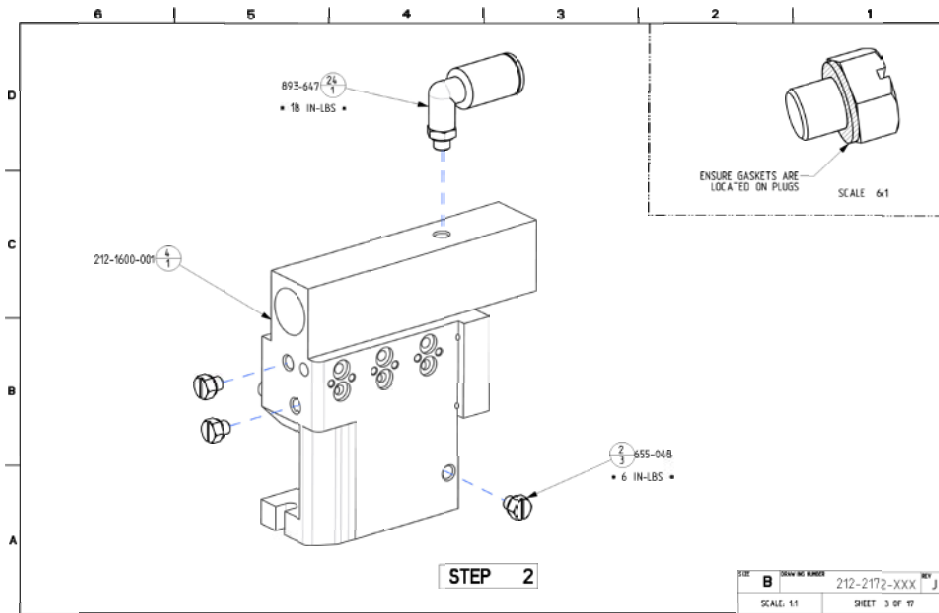
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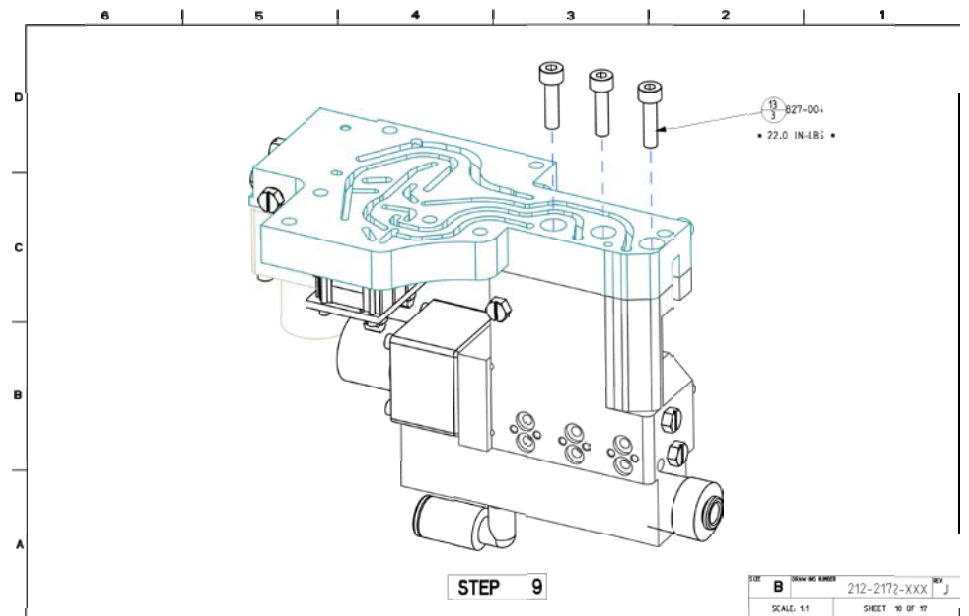
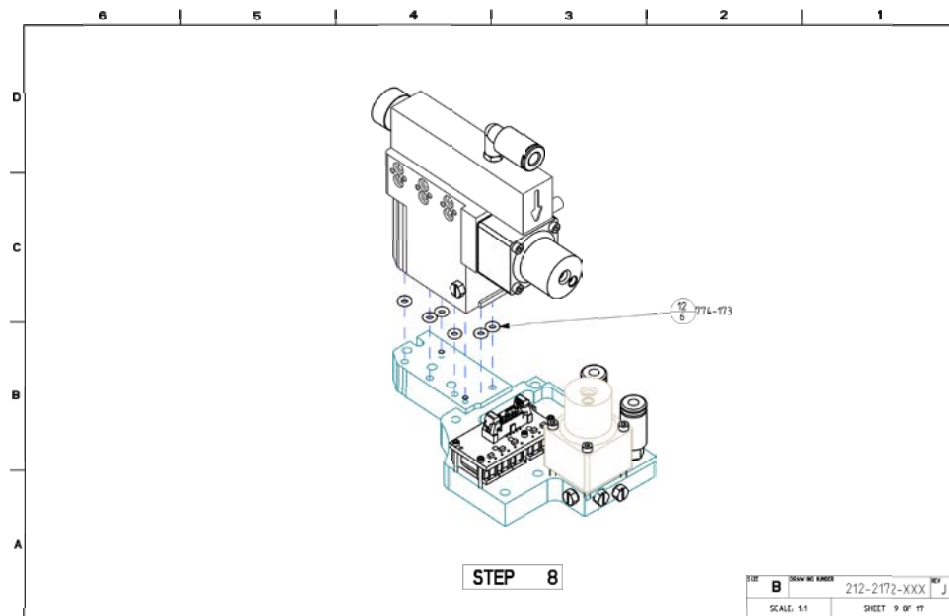
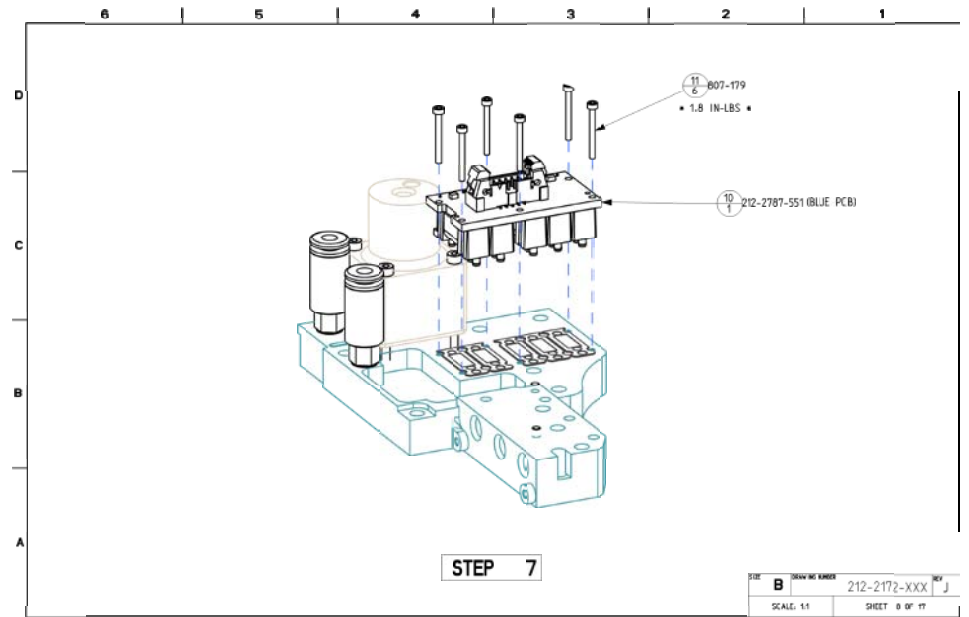
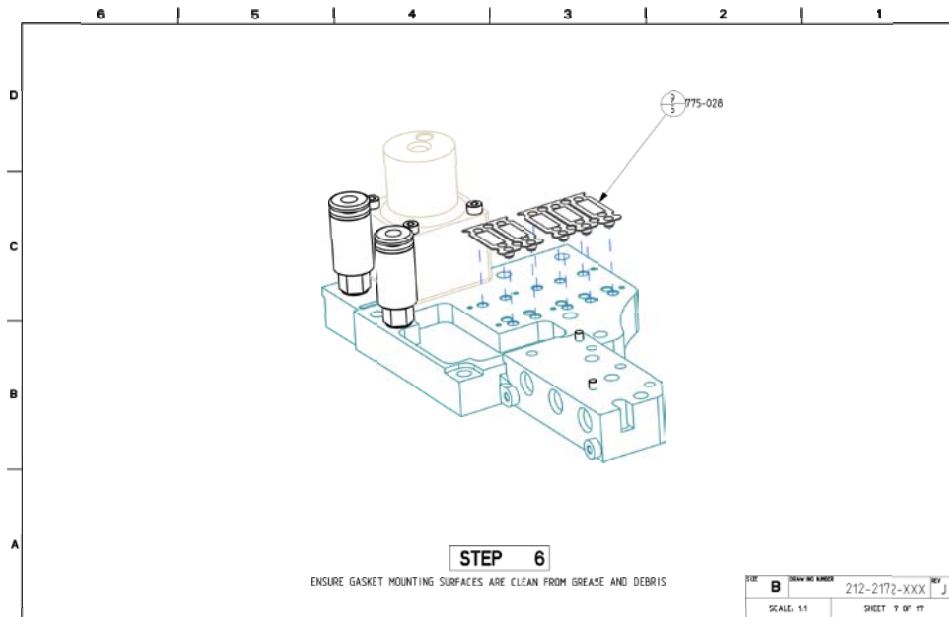
ENSURE GASKETS ARE LOCATED ON PLUGS

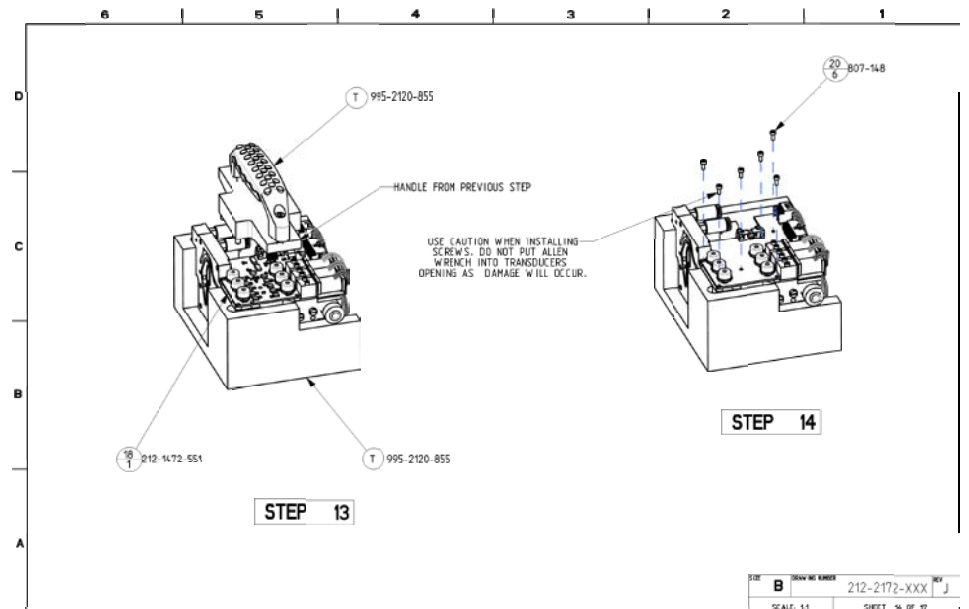
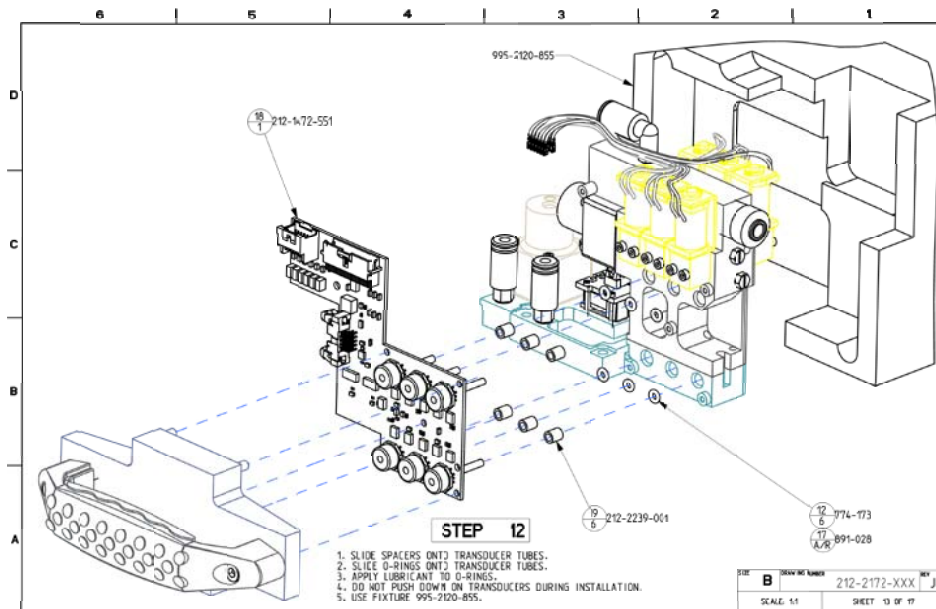
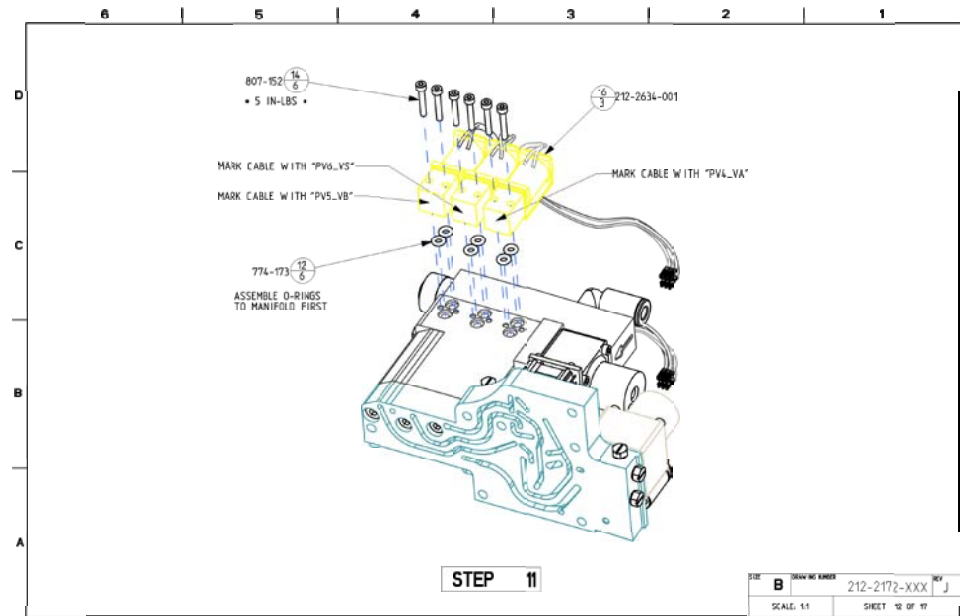
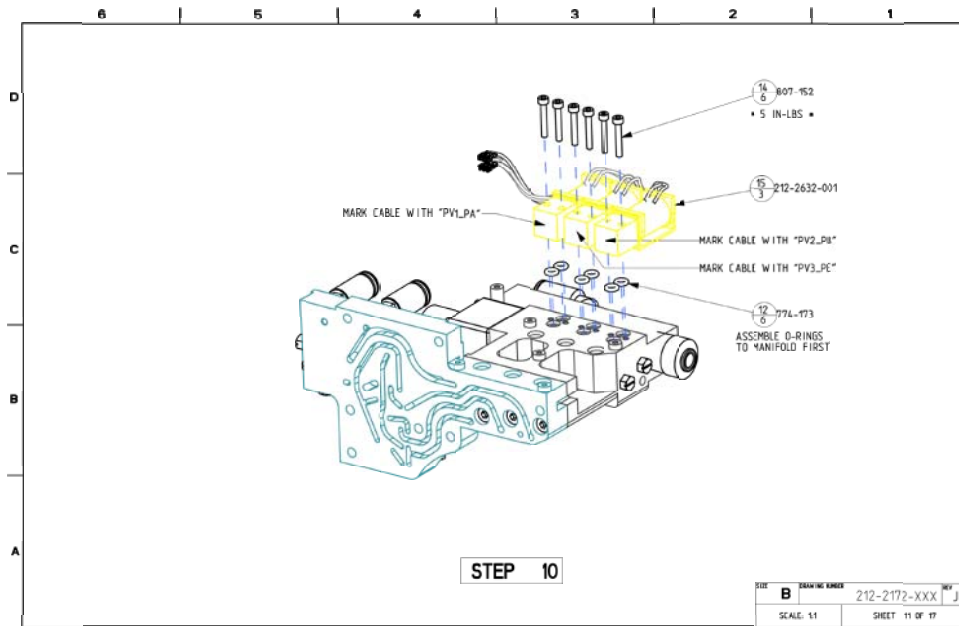
SCALE: 6:1

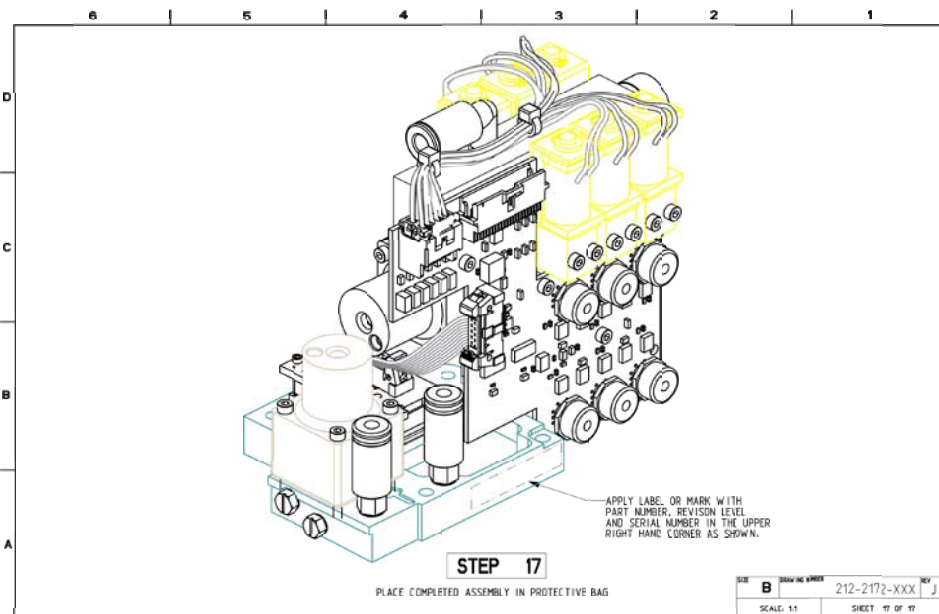
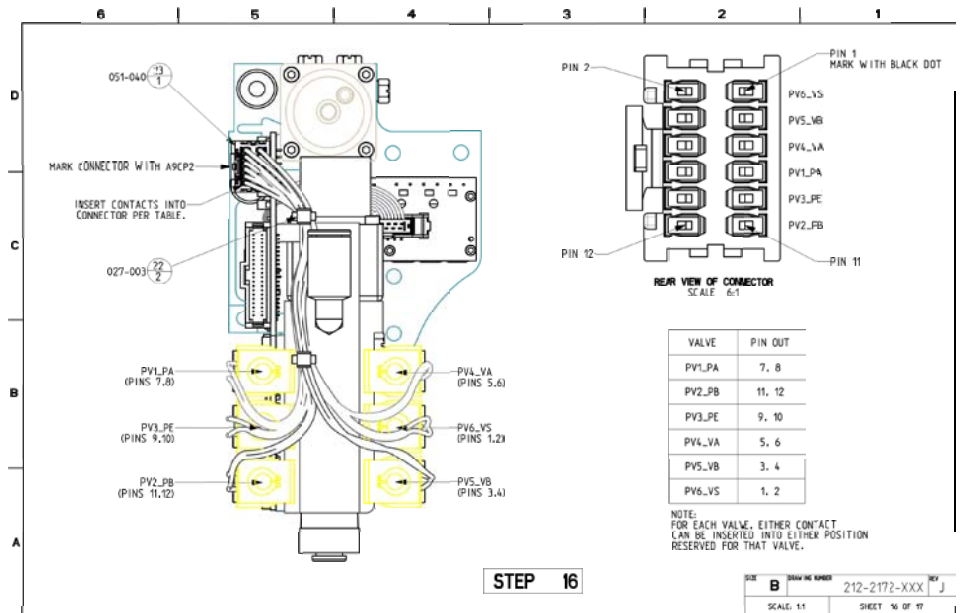
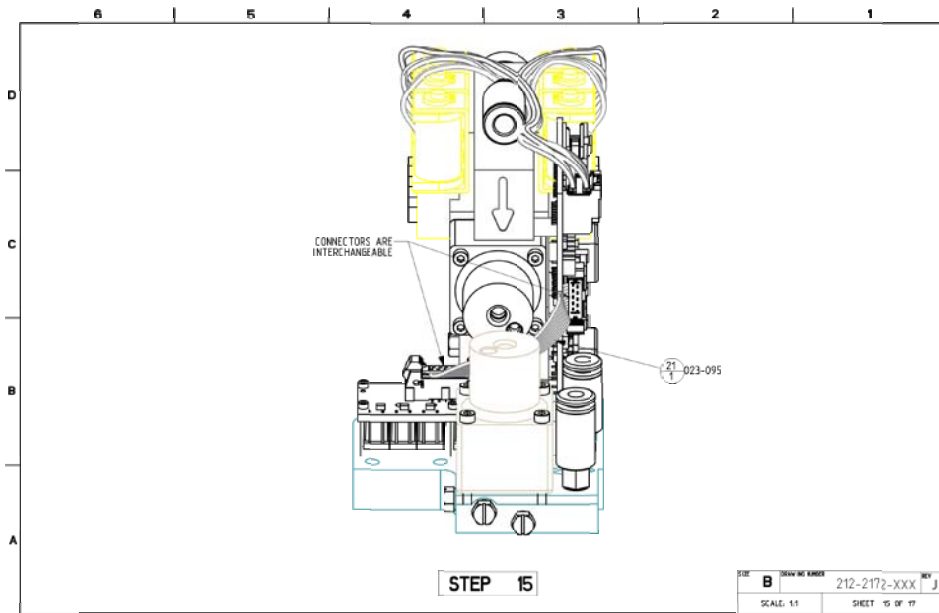
ITEM B DRAWING NUMBER 212-2172-XXX REV J

SCALE: 1:1 SHEET 2 OF 17









212-2154-501 ASSY, MANIFOLD, ASP FLUIDICS

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1668-001	MANIFOLD,ASPIRATION,NGVS	1
002	655-048	PLUG,10-32 THD,BRASS	2
003	893-744	FITTING,.25 TUBE X .125 MNPT	1
004	893-647	FITTING,M5X.8,6MM R ANGLE TUBE	1
005	051-039	CONNECTOR,6P,2MM SGL ROW P LOK	1
006	210-1154-001	VALVE,RELIEF,60 PSI 7/16 X 20	1
007	774-173	O-RING,.114X.070,VITON	6
008	212-2633-001	CABLE ASSY,PROP VALVE,5S	2
009	807-152	SCREW,CAP HD SKT,M2.5X16 SST	6
010	212-2632-001	CABLE ASSY,PROP VALVE,3S	1
011	886-032	VALVE,SOLENOID,24VDC	2
012	807-177	SCREW,CAP HD SKT,M2.5X25 SST	4
013	798-336	WASHER,FLAT,.125X.375X.030 SST	2
014	807-001	SCREW,CAP HD SKT,M3X5 SST	2
015	212-2580-001	SENSOR,PRESSURE,ABS 30	1
016	891-028	LUBRICANT,GREASE,HIGH-VACUUM	AR
AR = As Required			

212-2154-502 ASSY, MANIFOLD, ASP FLUIDICS

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1668-001	MANIFOLD,ASPIRATION,NGVS	1
002	655-048	PLUG,10-32 THD,BRASS	2
003	893-744	FITTING,.25 TUBE X .125 MNPT	1
004	893-647	FITTING,M5X.8,6MM R ANGLE TUBE	1
005	051-039	CONNECTOR,6P,2MM SGL ROW P LOK	1
006	212-3142-001	VALVE,RELIEF,30 PSI 7/16X20	1
007	774-173	O-RING,.114X.070,VITON	6
008	212-2633-001	CABLE ASSY,PROP VALVE,5S	2
009	807-152	SCREW,CAP HD SKT,M2.5X16 SST	6
010	212-2632-001	CABLE ASSY,PROP VALVE,3S	1
011	886-032	VALVE,SOLENOID,24VDC	2
012	807-177	SCREW,CAP HD SKT,M2.5X25 SST	4
013	798-336	WASHER,FLAT,.125X.375X.030 SST	2
014	807-001	SCREW,CAP HD SKT,M3X5 SST	2
015	212-2580-001	SENSOR,PRESSURE,ABS 30	1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. -5XXX SERIES PART NUMBERS ARE MADE FROM 1 FAC1 OF THE -5XXX SERIES P/N.
5. • XX IN-LBS • - INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE +/- 10% OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
6. BUILD PER 992-2120-301.

REVISION HISTORY

REV	ECN	DATE
P13	NOT RELEASED	03/21/08
A	20080900	03/25/08
B	20082041	08/12/08
C	20091335	07/24/09
D	EN046470ECN	08/13/13
E	EN056783ECN	08/01/14

TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER (4)	REV	DESCRIPTION
212-2154-501	ASSY.MANFOLD,ASP FLUIDICS	212-2154-501S	E	ASSY.MANFOLD,ASP FLUIDICS SVC
212-2154-502	ASSY.MANFOLD,ASP FLUIDICS	212-2154-502S	E	ASSY.MANFOLD,ASP FLUIDICS SVC

SEE SEPARATE PARTS LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	212-2154-501	ASSY.MANFOLD,ASP FLUIDICS		

DATE: 8/2/06
BY: J. ATHERLEY
CHECKED: N. KING
APPROVED: A. HAHN
DATE: 8/2/06
POM INK MODEL ATTRIBUTES: NAME: 212-2154-501.PROJ
VERSION: 1.0

ALCON
POM INK CALIFORNIA, USA

212-2154-XXX
REV E

STEP 1

CLEAN WORK BENCH AND SPRAY WITH FSD CLEANER BEFORE STARTING ASSEMBLY

212-2154-XXX
REV E

SCALE: 2:1
SHEET 2 OF 14

ENSURE GASKETS ARE LOCATED ON PLUGS
SCALE: 6:1

212-1668-001
212-655-048
• 6 IN-LBS •

STEP 2

893-744
893-560 SUBSTITUTE

212-2154-XXX
REV E

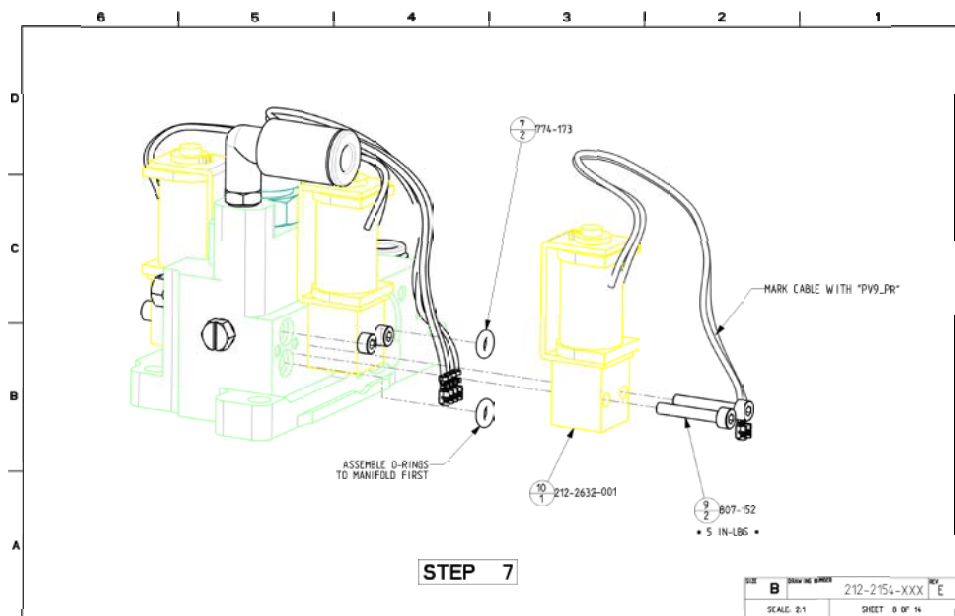
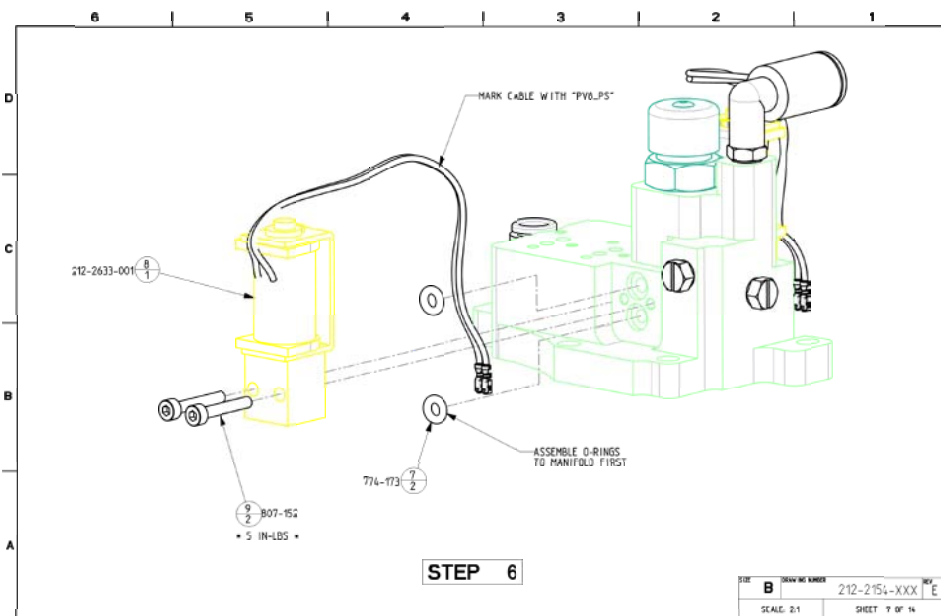
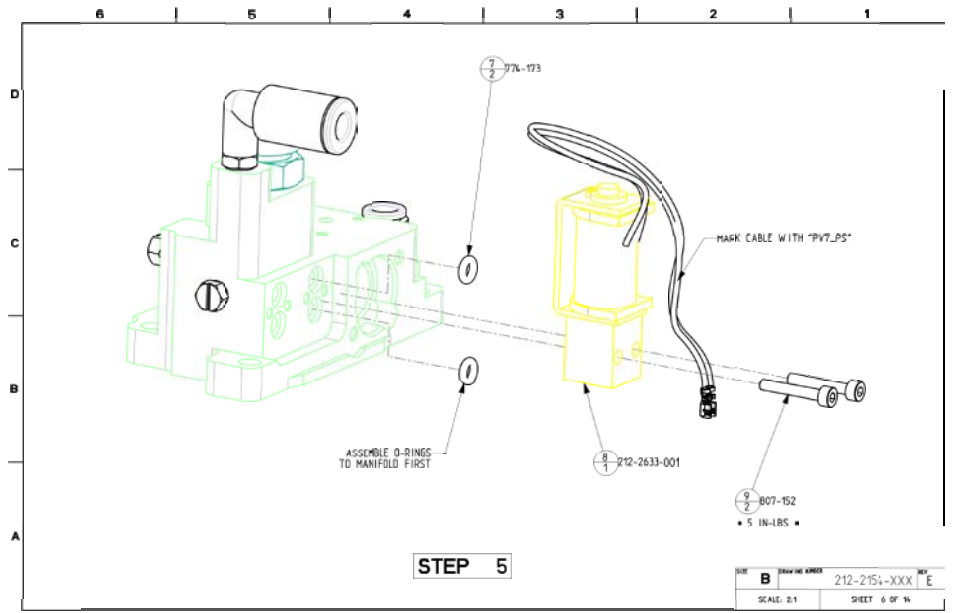
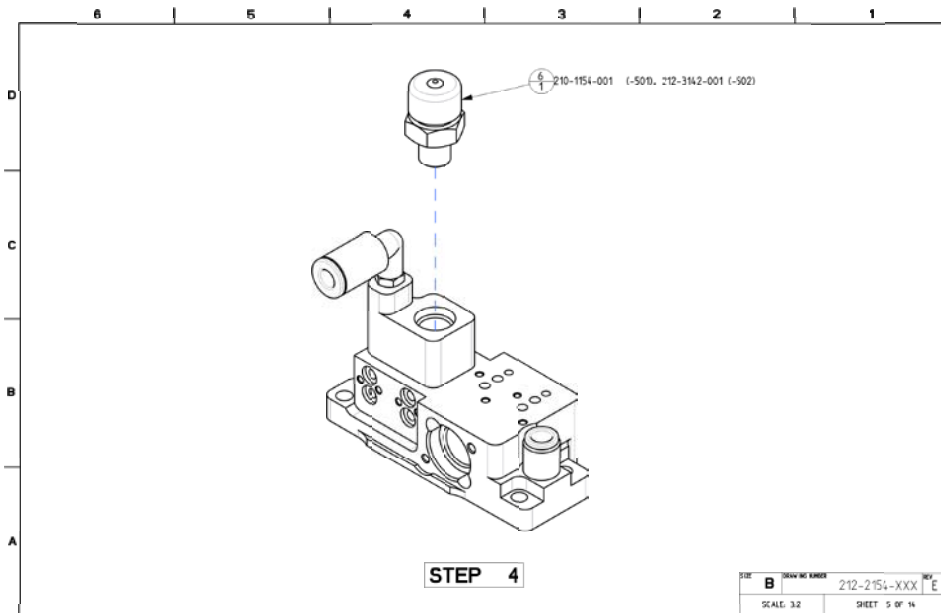
SCALE: 2:1
SHEET 3 OF 14

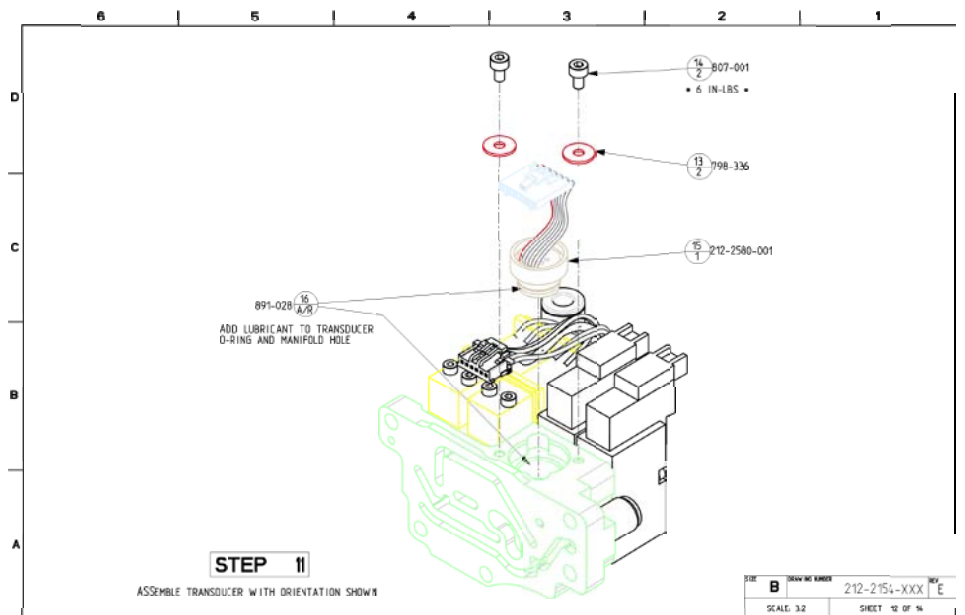
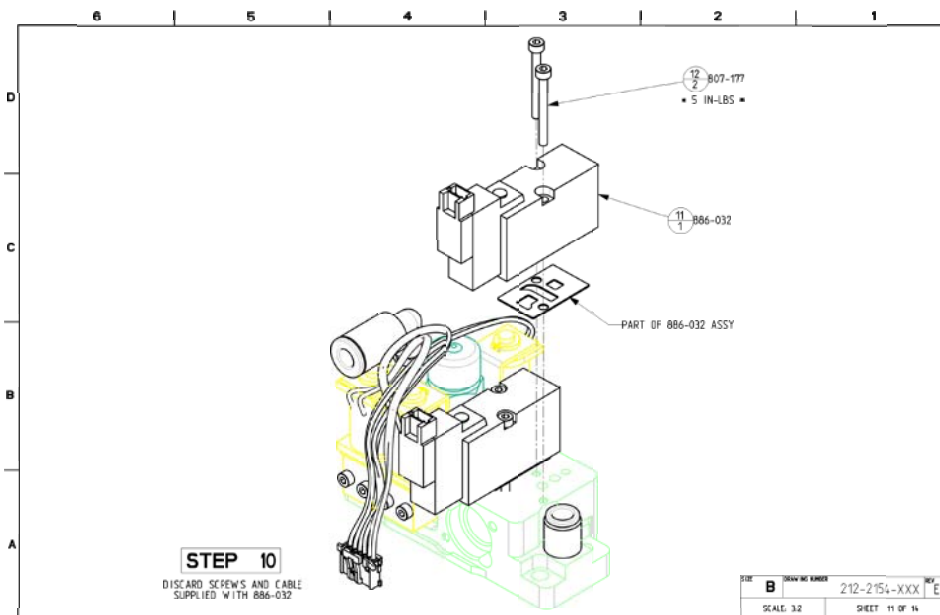
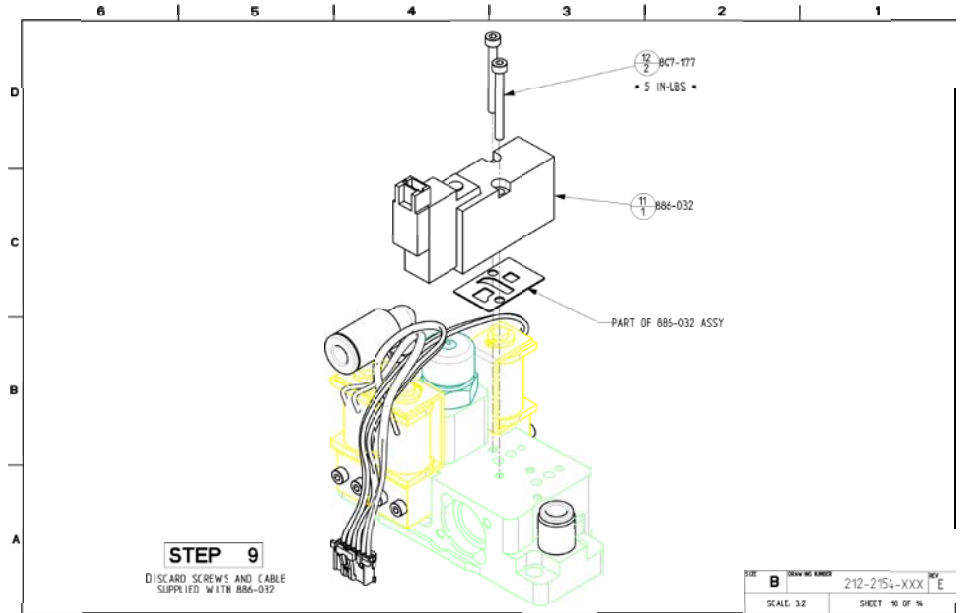
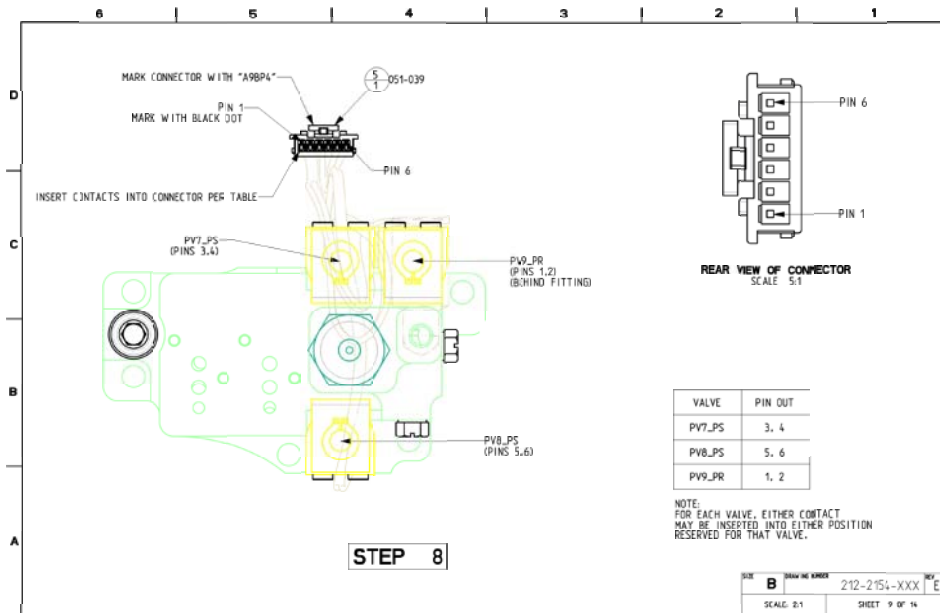
STEP 3

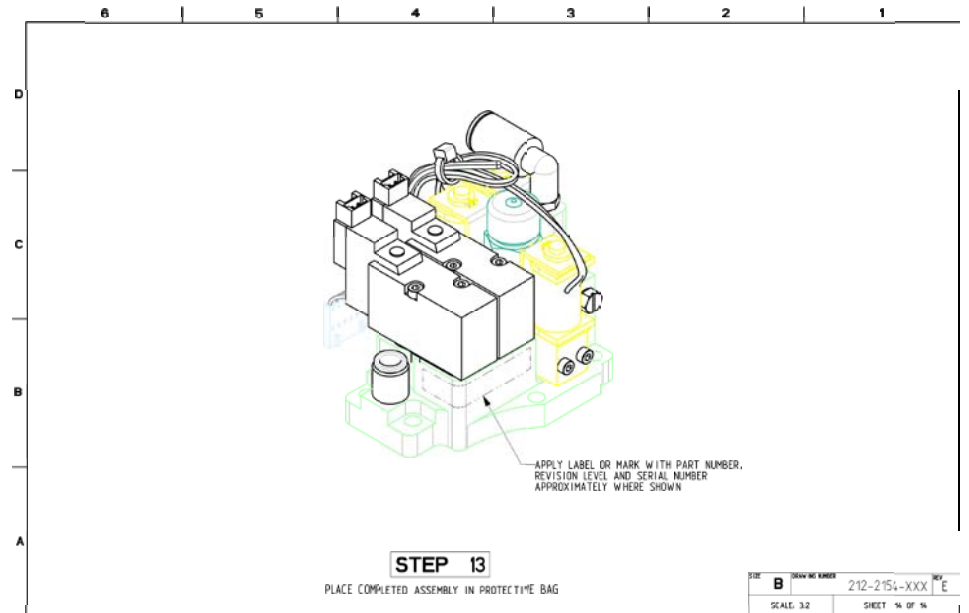
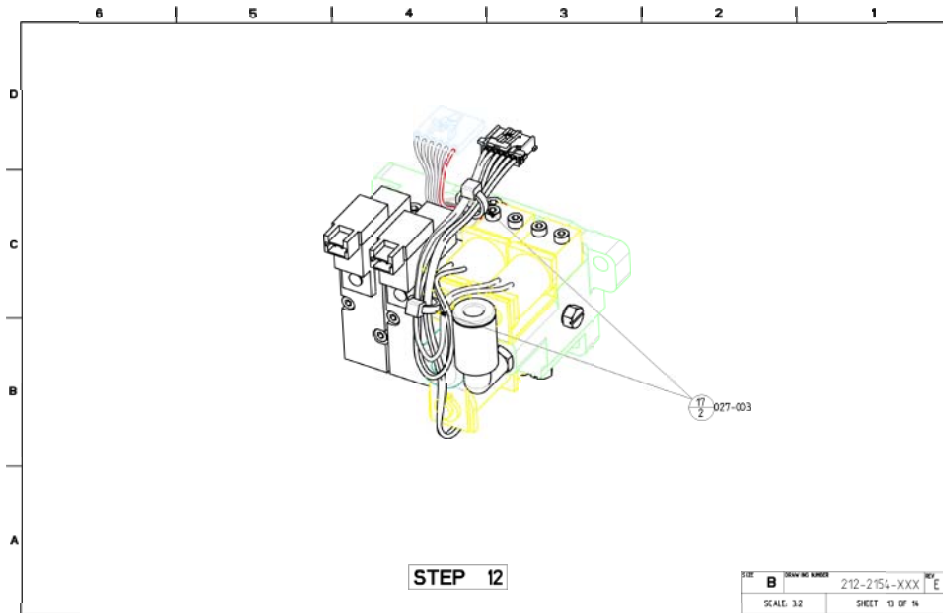
893-647
• 18 IN-LBS •

212-2154-XXX
REV E

SCALE: 2:1
SHEET 4 OF 14







212-3150-501 ASSY, FACEPLATE

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1530-551	ASSY,PCB,FLUIDICS CASS ID	1
002	212-1816-001	SHAFT,TRANSFER	1
003	212-1841-001	BRACKET,MOUNTING,NIFS	1
004	212-2251-501	ASSY,SENSOR,NIF	1
005	212-2635-001	SHAFT,ALIGNMENT,NIFS	2
006	212-3153-001	FACEPLATE,FLUIDICS	1
007	212-3137-501	ASSY,SENSOR,LEVEL INF	1
008	212-3138-501	ASSY,SENSOR,LEVEL ASP	1
009	807-139	SCREW,CAP HD SKT,M2.0X3 SST	2
010	827-001	SCREW,CAP HD,M2X0.4X5 SST W/CT	10

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. BUILD PER 992-2120-001.

REVISION HISTORY

REV	ECN	DATE
PO	NOT RELEASED	08/05/08
A	20002120	08/14/08
B	20091930	02/20/09
C	20100903	06/14/10
D	10042229ECN	06/13/13
E	10046203ECN	09/19/13
F	EN054895ECN	04/22/14

TABULATION

PART NUMBER	REV	DESCRIPTION
212-3150-501	F	ASSY FACEPLATE
212-3150-502	F	ASSY FACEPLATE

SEE SEPARATE PARTS LIST

QTY PART NUMBER DESCRIPTION MATERIAL/MANUFACTURER ITEM

BY P. NGUYEN DATE 06/16/04 THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.

CHECKED B. LEE DATE 06/17/09

APPROVED A. HAHN DATE 06/17/09

FORM REVISED 2/23/2007

POINK MODEL ATTRIBUTES NAME: 212-3150-XXX VERSION: 1.4

Alcon
Irvine, California 92618

DESCRIPTION ASSY.FACEPLATE

SIZE B DRAWING NUMBER 212-3150-XXX REV F

SCALE: 1:1 SHEET 1 OF 6

STEP 1

NOTE: CHECK RED FILM IS VISIBLE ON ALL THREE LENSES. ONCE INSTALLED REMOVE ALL THREE RED FILMS AND CLEAN GLASS SURFACE WITH ISOPROPYLOL ALCOHOL AND LINT FREE CLOTH OR WIFE.

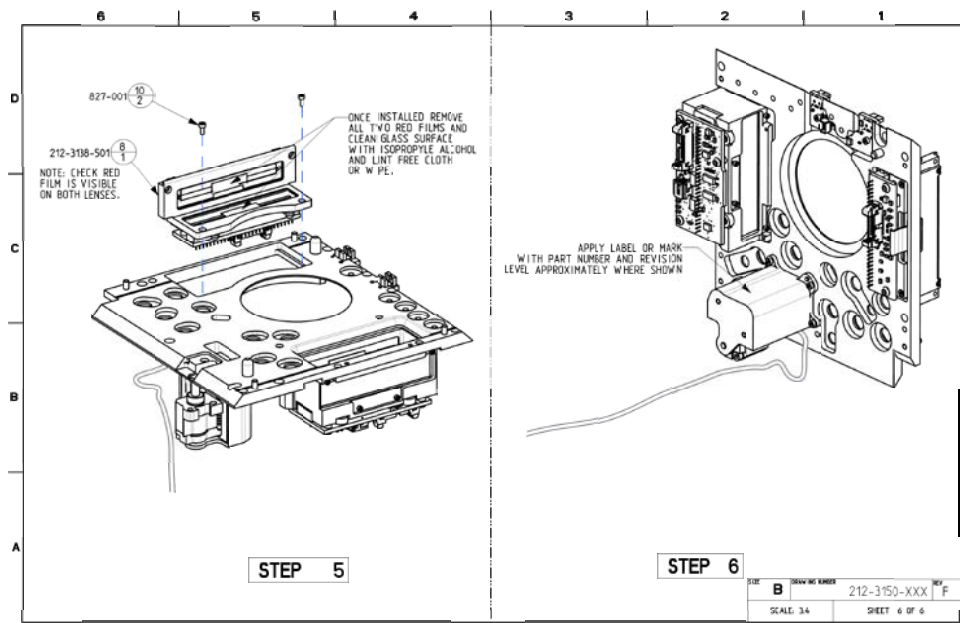
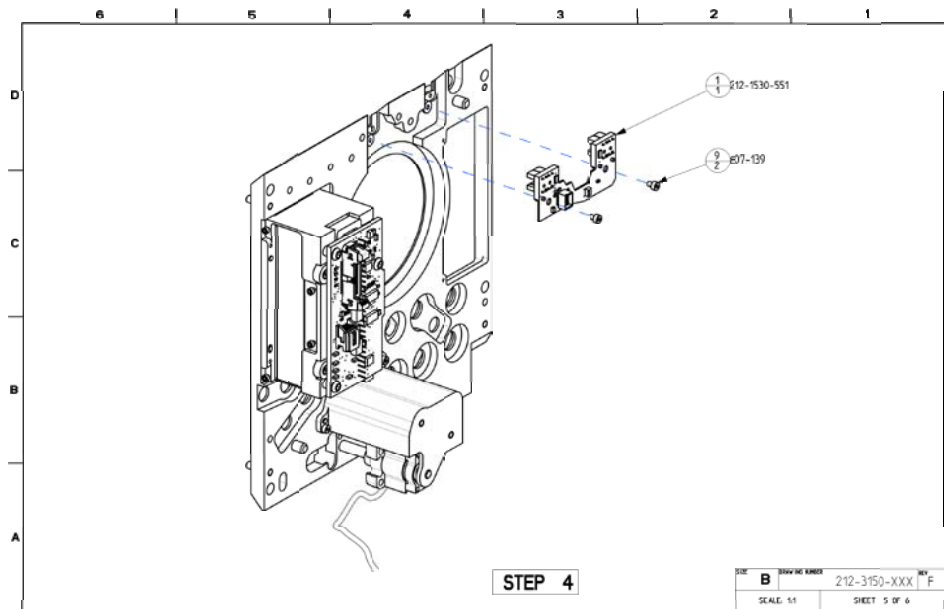
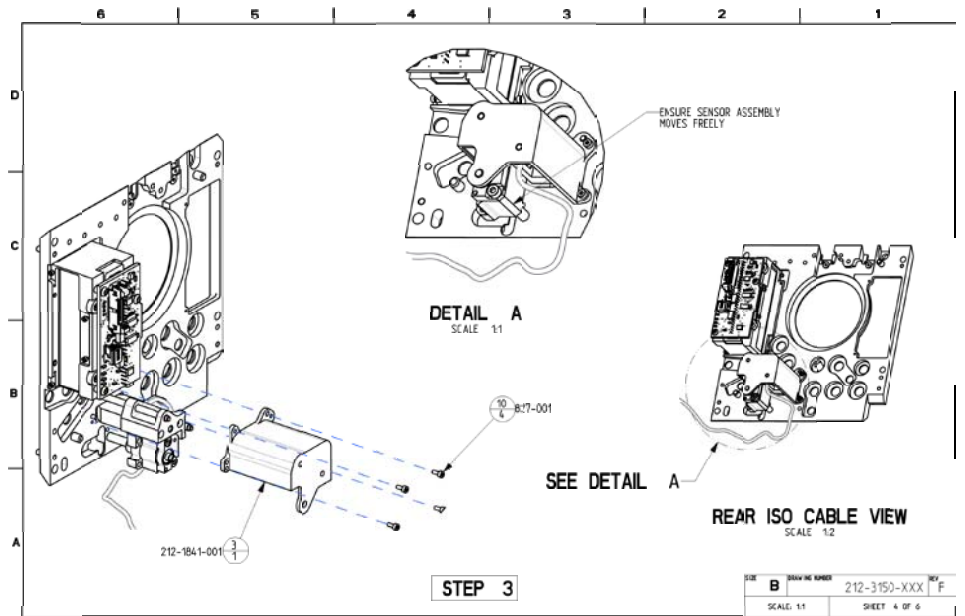
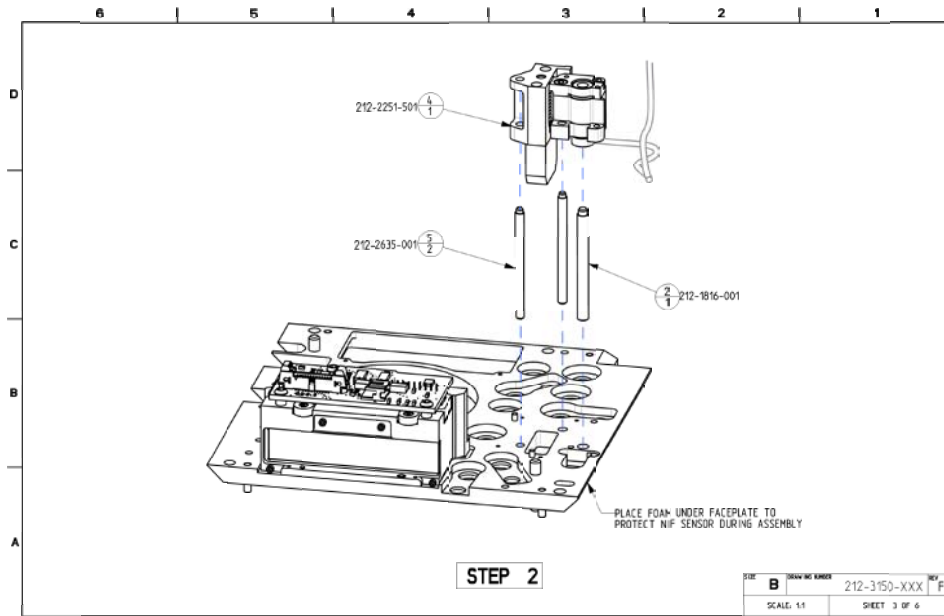
212-3137-501 FOR -501 ONLY
212-3137-502 FOR -502 ONLY

827-001

212-3153-001

SIZE B DRAWING NUMBER 212-3150-XXX REV F

SCALE: 1:1 SHEET 2 OF 6



212-3050-501 ASSY, FACEPLATE

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-1530-501	ASSY,PCB,FLUIDICS CASS ID	1
2	212-1816-001	SHAFT,TRANSFER	1
3	212-1841-001	BRACKET,MOUNTING,NIFS	1
4	212-2251-501	ASSY,SENSOR,NIF	1
5	212-2635-001	SHAFT,ALIGNMENT,NIFS	2
6	212-3049-001	FACEPLATE,FLUIDICS	1
7	212-3054-501	ASSY,SENSOR,LEVEL INF	1
8	212-3055-501	ASSY,SENSOR,LEVEL ASP	1
9	807-139	SCREW,CAP HD SKT,M2.0X3 SST	2
10	827-001	SCREW,CAP HD,M2X0.4X5 SST W/CT	10

NOTES: UNLESS OTHERWISE SPECIFIED

- INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
- UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.

3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.

REVISION HISTORY

REV	ECN	DATE
P2	NOT RELEASED	03/19/08
A	20080978	04/02/08

SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY P. NGUYEN	DATE 03/13/08	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION. IT IS THE PROPERTY OF ALCON. IT IS TO BE USED ONLY FOR THE PURPOSES OF THE PROJECT AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION OF ALCON.		DESCRIPTION: ASSY.FACEPLATE
CHECKED B. LEE	DATE 03/19/08	ALCON		SCALE: 1:1
APPROVED A. HAHN	DATE 03/19/08	SCALE: 1:1		SHEET 1 OF 6
FORM: REVISION	2/23/2007	NAME: 212-3050-501_PROC		VERSION: A.1
PDM LINK MODEL ATTRIBUTES				

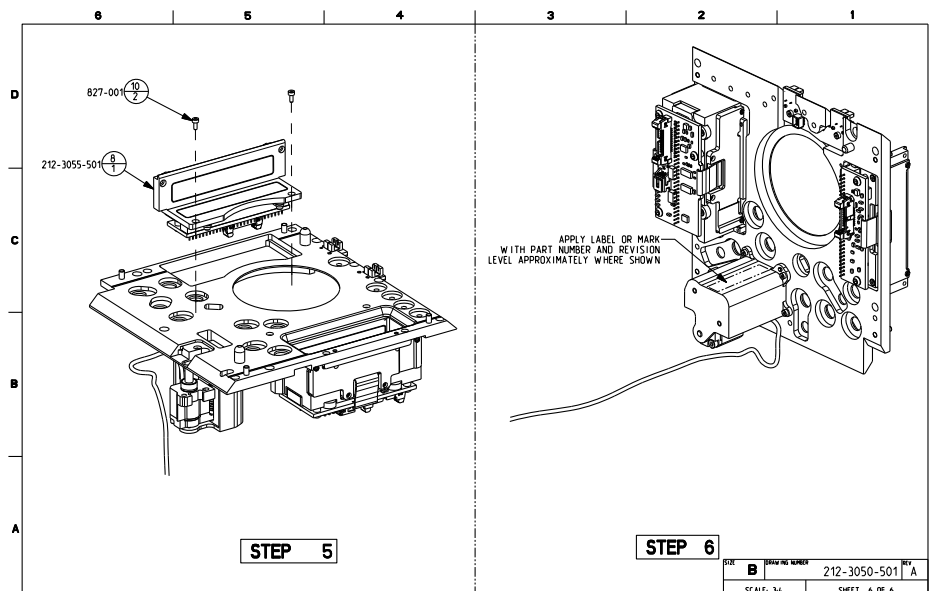
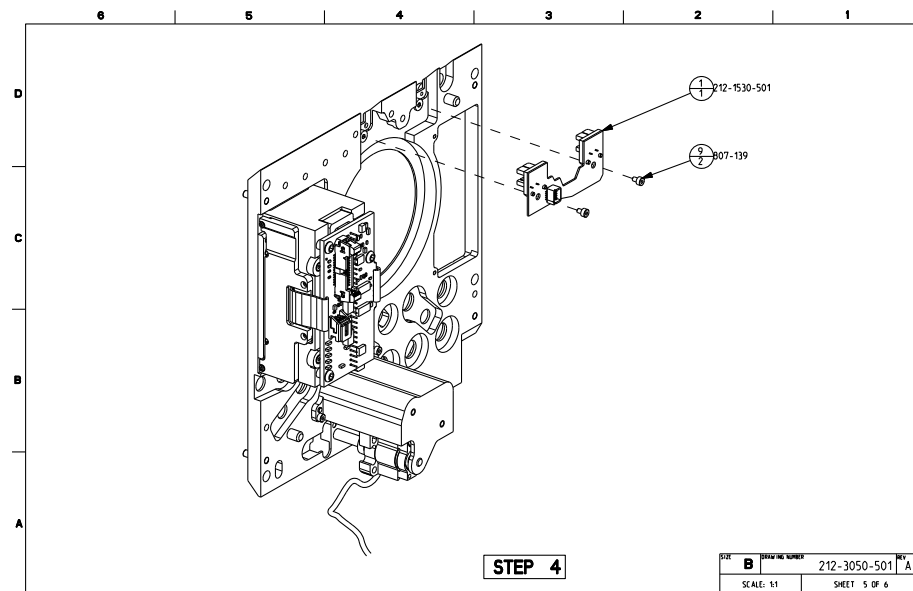
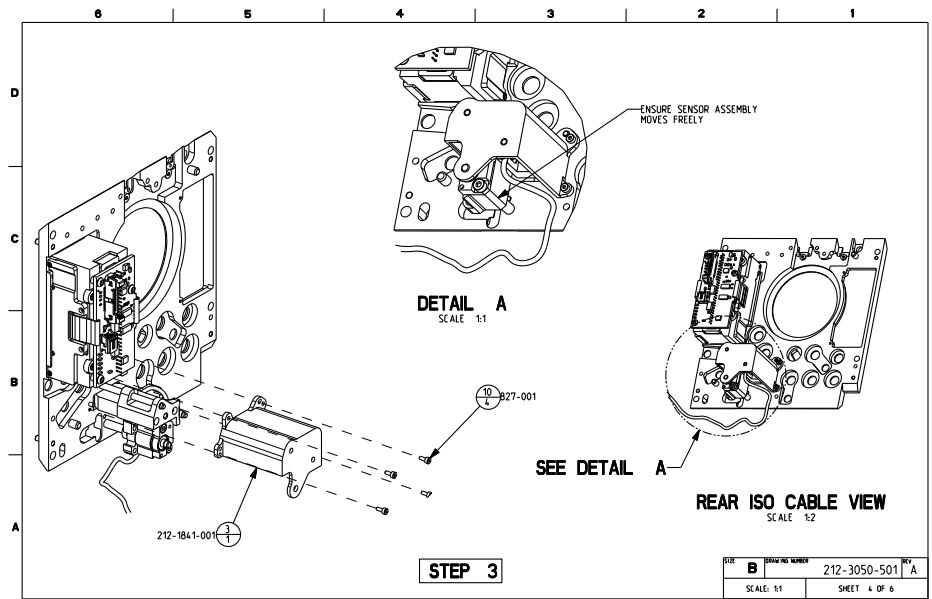
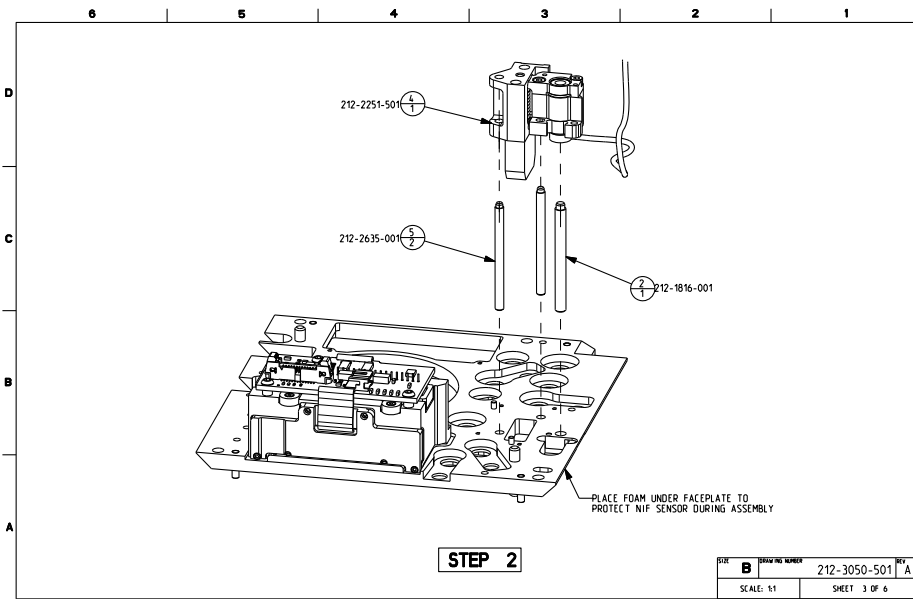
STEP 1

827-001

212-3054-501

212-3049-001

REV	ECN	DATE
B	212-3050-501	A
SCALE: 1:1		SHEET 2 OF 6



212-2362-501 ASSY, ACTUATOR, MOUNTING

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	895-356	ACTUATOR,DBL,TFL 1-1/16 BORE	1
2	893-626	FITTING,ELBOW,,125 NPT BRASS	2
3	892-355	ADHESIVE,SEALANT,LOCTITE 51604	0
4	212-2272-001	CABLE ASSY,LATCH POS,W99	1
5	212-1693-001	BRACKET,ACTUATOR,LOWER	0
6	212-1754-001	BRACKET,STIFFENER,ACTUATOR	0
7	212-1694-001	BRACKET,ACTUATOR,UPPER	0
8	801-106	WASHER,FLAT,M5 SST W/BLK OXD	4
9	807-028	SCREW,CAP HD SKT,M5X16 SST	4
10	663-056	GROMMET,EDGE,NYL .072-.105 THK	0.5 FT
11	027-003	CABLE TIE,,.625X3.50L,NYLON	3
12	212-1697-001	BLOCK,PIVOT,REFERENCE LINK	1
13	807-025	SCREW,CAP HD SKT,M5X8 SST	2
14	212-2540-001	NUT,HEX,,.312-24 RH LP SST	1
15	212-1700-001	CLEVIS,ACTUATOR	1
16	212-1698-001	LINK,TRANSFER	1
17	600-188	BEARING,BALL,,.31X.5 ABEC-5	1
18	773-058	RING,RETAINING,,.531X.018 SST	1
19	600-187	BEARING,BALL,,.25X.5 ABEC-5	2
20	212-1696-001	LINK,REFERENCE,LEFT	0
21	212-1696-002	LINK,REFERENCE,RIGHT	0
22	212-1701-001	SHAFT,LINK,TRANSFER	2
23	773-090	RING,RETAINING,EXT .250 SHAFT	4
24	212-1702-001	STANDOFF,LINK,REFERENCE	3
25	807-013	SCREW,CAP HD SKT,M4X8 SST	6
26	212-1703-001	LINK,RELEASE,CASSETTE	0
27	212-1704-001	ROLLER,LINK,RELEASE	1
28	212-1716-001	STANDOFF,ROLLER	1
29	809-006	SCREW,BTN HD SKT,M4X8 SST	1
30	801-004	WASHER,FLAT,M4 SST	2
31	212-1705-001	WASHER,LINK,RELEASE	1
32	212-1706-001	SPACER,PIVOT,RELEASE LINK	1
33	803-004	NUT,HEX,M4X0.7 SST	1
34	807-018	SCREW,CAP HD SKT,M4X25 SST	1
35	807-003	SCREW,CAP HD SKT,M3X8 SST	3
36	212-2598-001	BRACKET,TUBE,ACTUATOR	0
37	040-366	TUBING,PEU,,.125X.250OD ORANGE	3 FT
38	893-630	FITTING,CLAMP,TUBE .281 ID BRS	2
39	212-3396-SSC	KIT,SSC,MTG ACTUATOR SHEET MTL	1

NOTES: UNLESS OTHERWISE SPECIFIED

- INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
- UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
- BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
- BUILD PER 992-2120-001

REVISION HISTORY

REV	ECN	DATE
P1B	NOT RELEASED	03/13/08
A	20080806	03/17/08
B	20081381	05/27/08
C	20100935	06/24/10
D	EN022242ECN	09/29/11

SEE SEPARATE PART LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY J. ATHERLEY	DATE 5/11/06	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF ALCON.		DESCRIPTION: ASSY, ACTUATOR, MOUNTING
CHECKED N. KING	DATE 5/24/06	Aicon		REV D
APPROVED D. WILLIAMS	DATE 5/24/06	SCALE: 1:2		SHEET 1 OF 17
FORM REVISION 2/23/2007	NAME: 212-2362-501_PROC		VERSION: D.1	

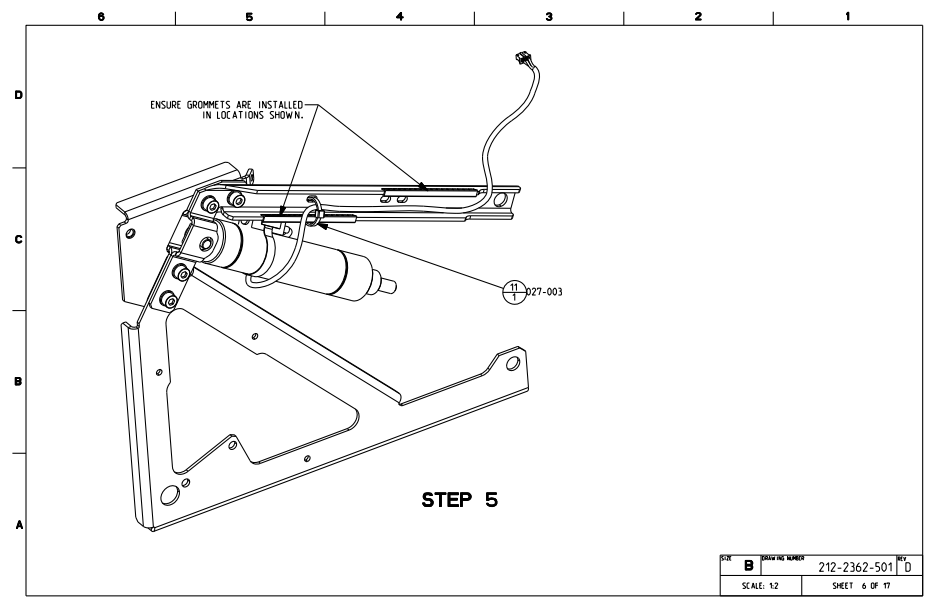
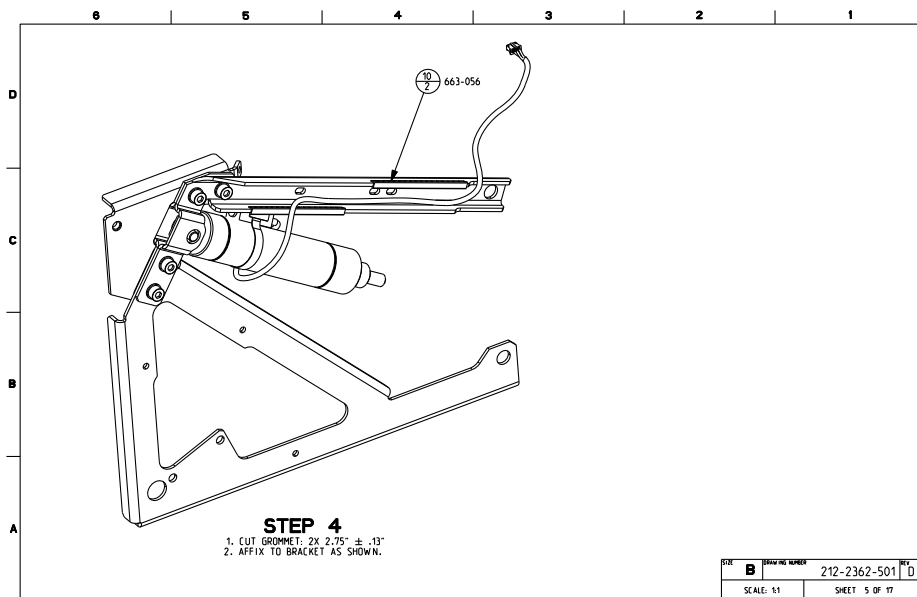
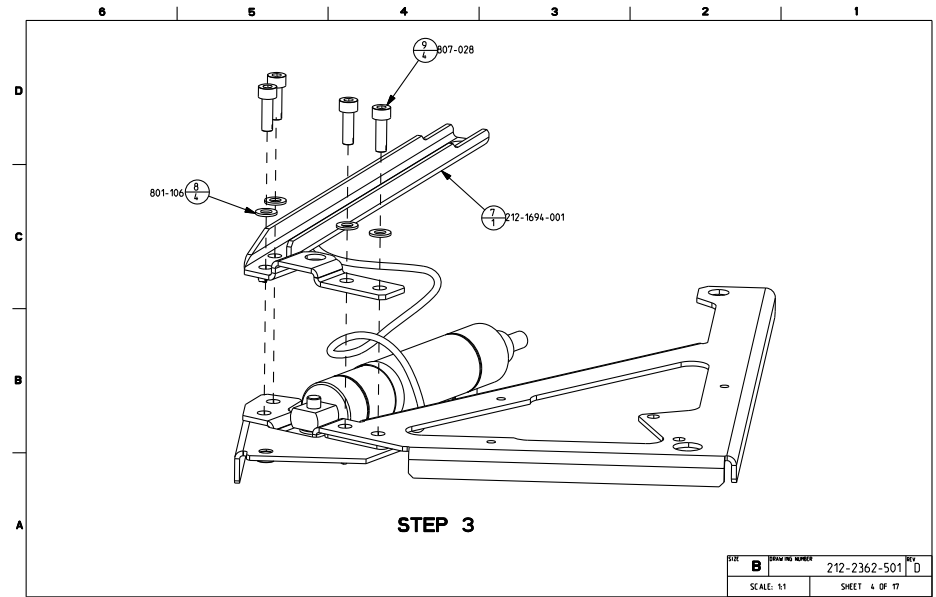
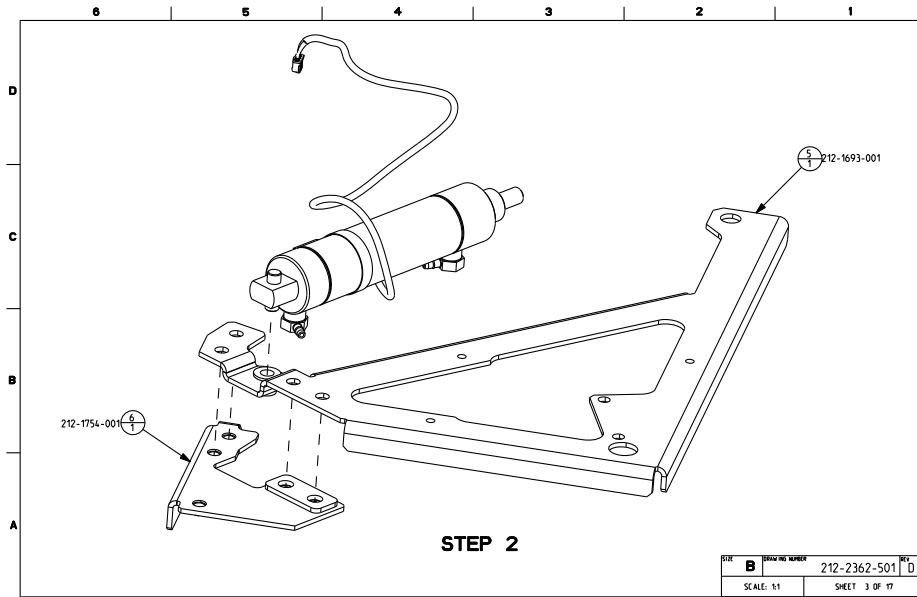
STEP 1

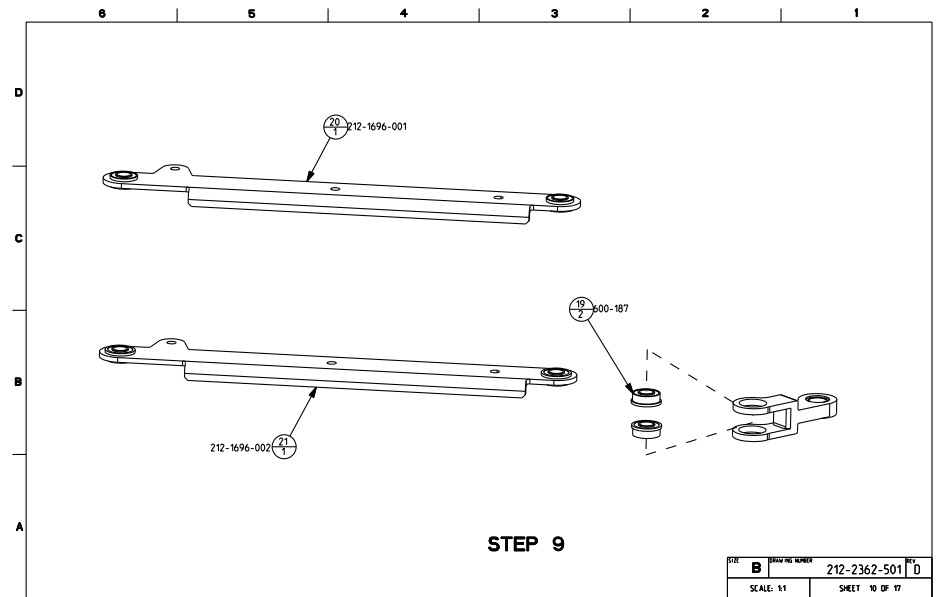
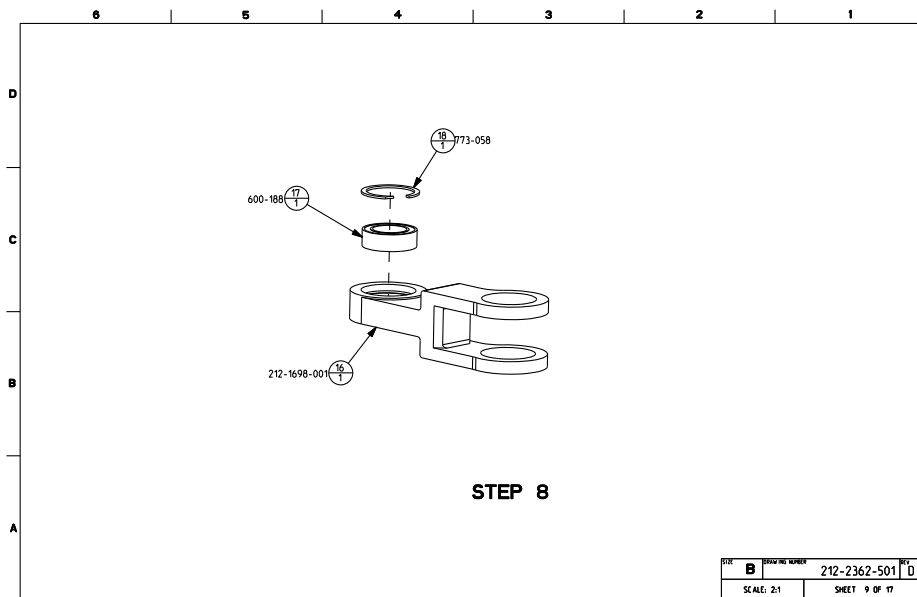
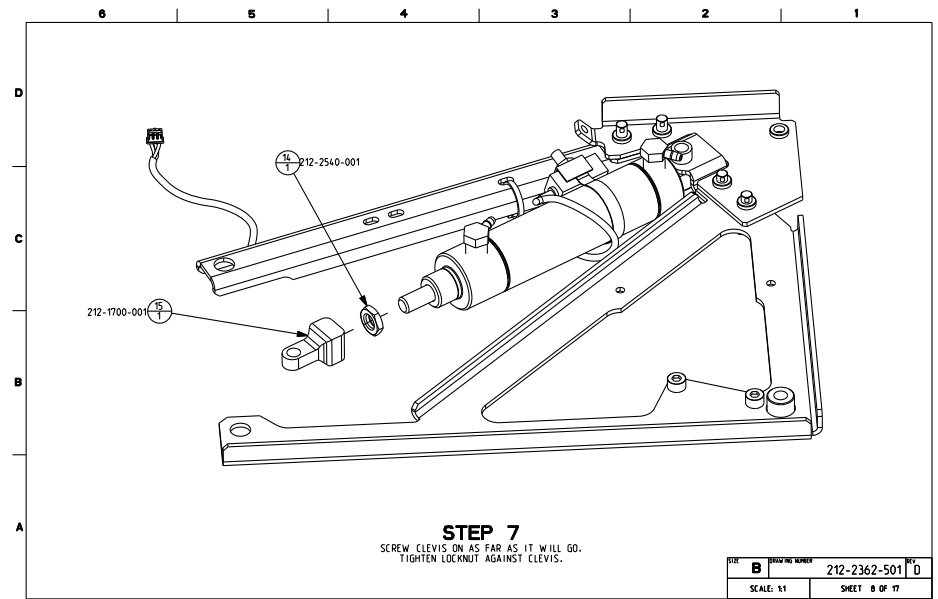
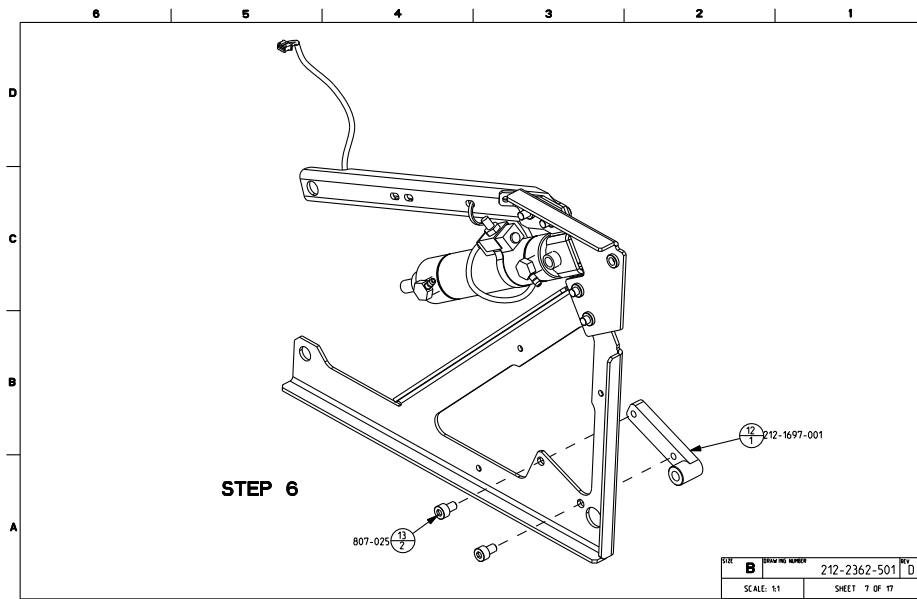
ORIENT 2 FITTINGS AND 1 SENSOR AS SHOWN USING FIXTURE 995-2120-545. FOR FITTINGS:

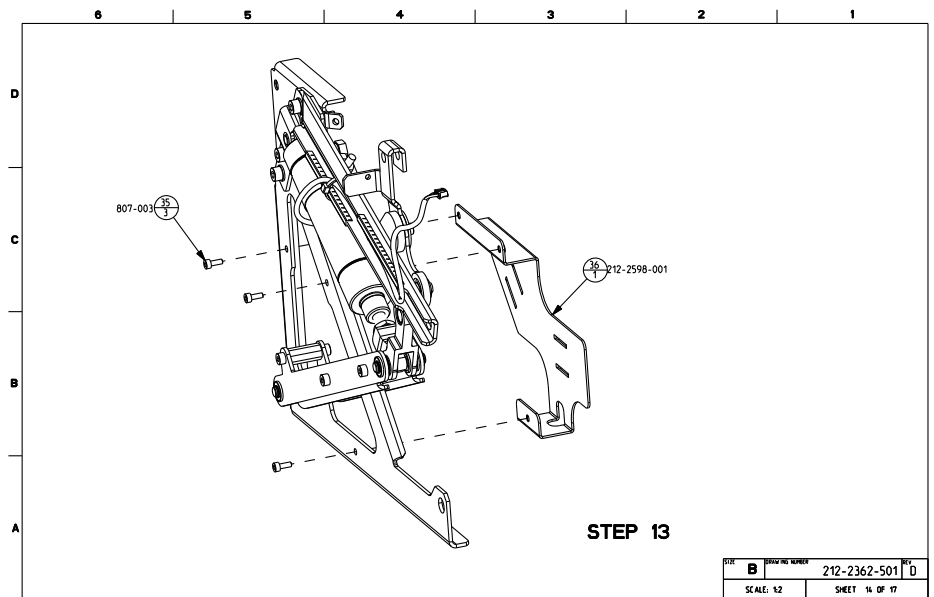
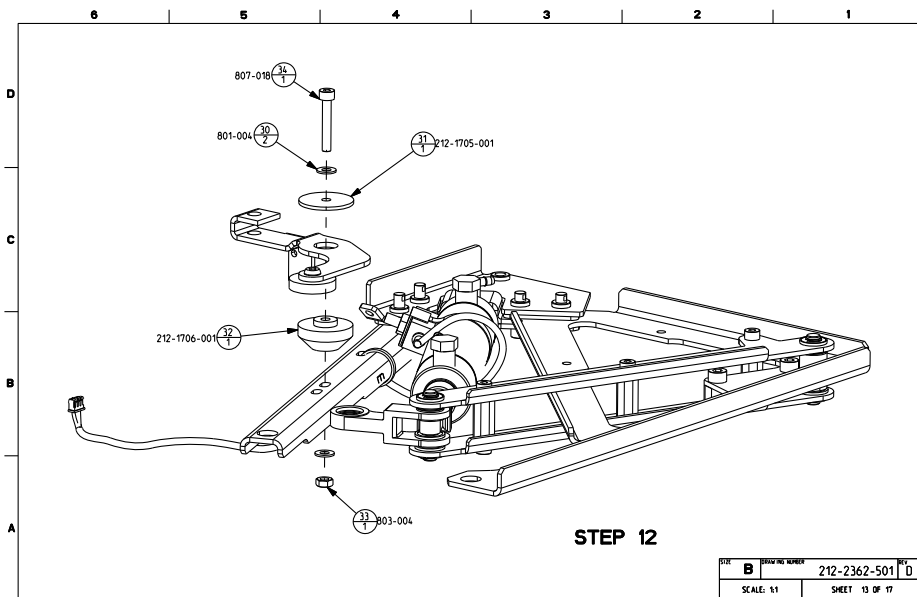
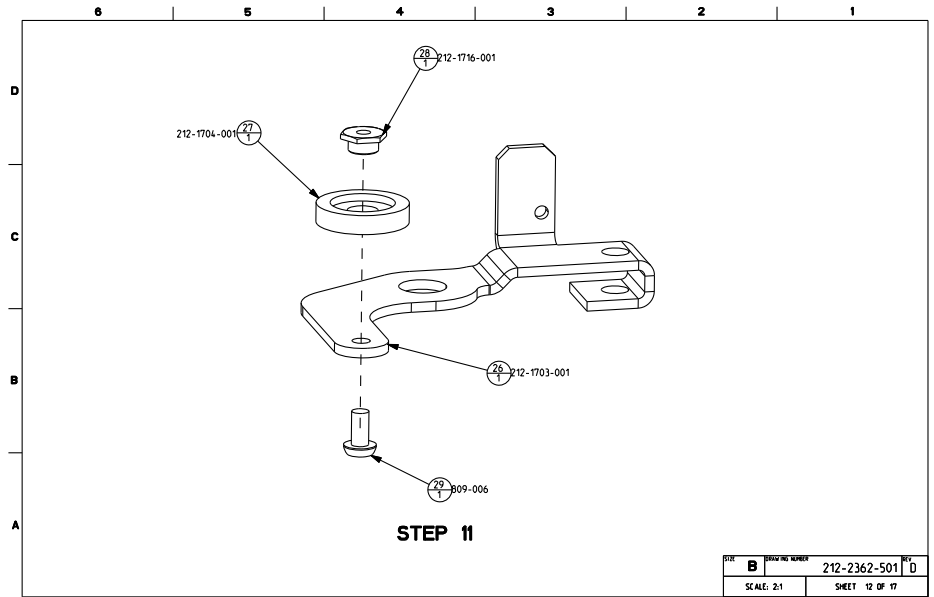
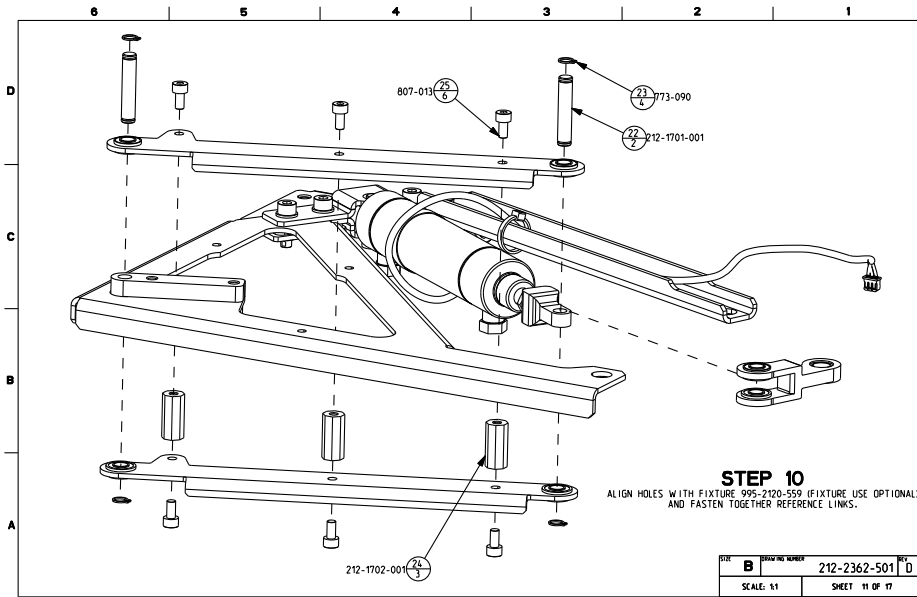
- HAND TIGHTEN.
- PLACE IN FIXTURE 995-2120-545.
- TIGHTEN USING CUSTOM SOCKET UNTIL FITTINGS HIT STOPS.

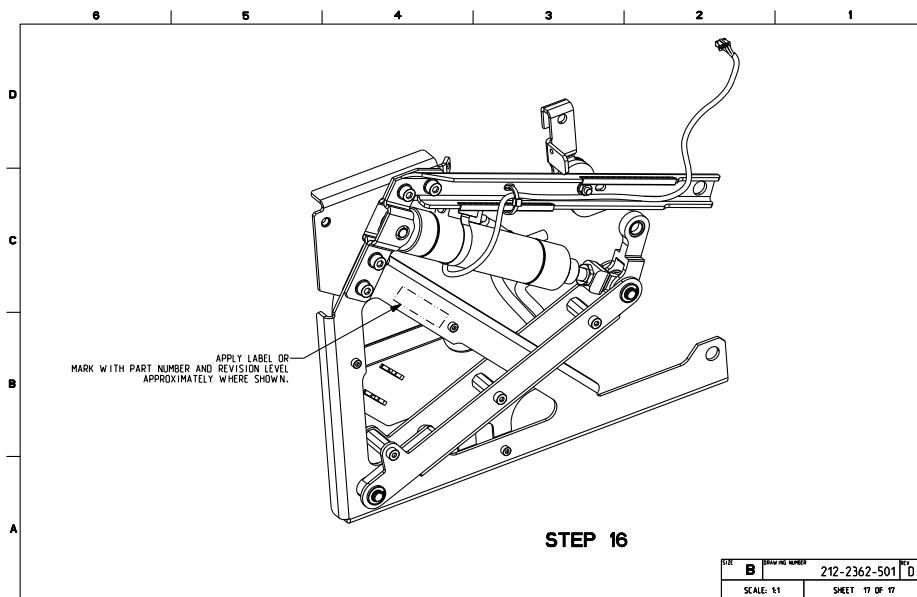
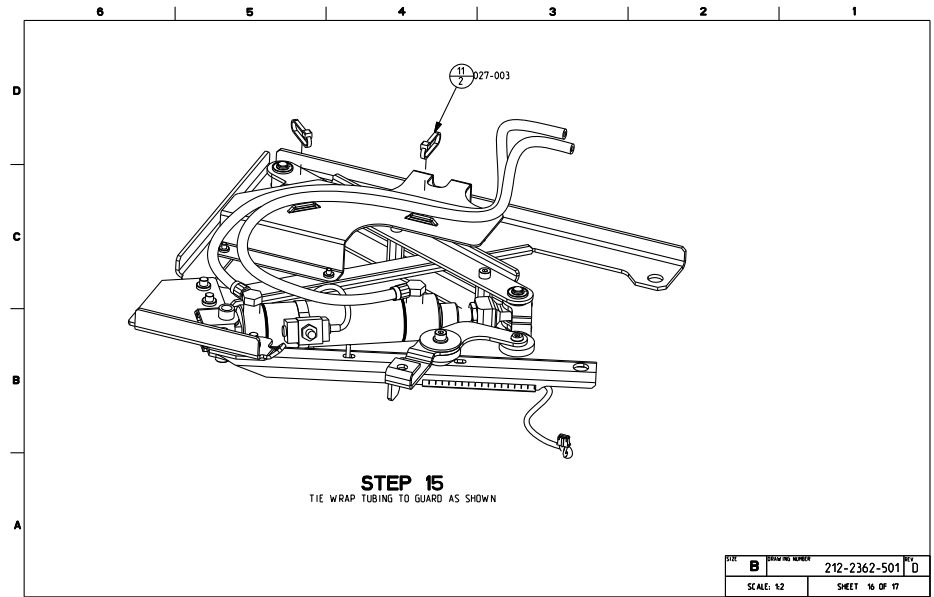
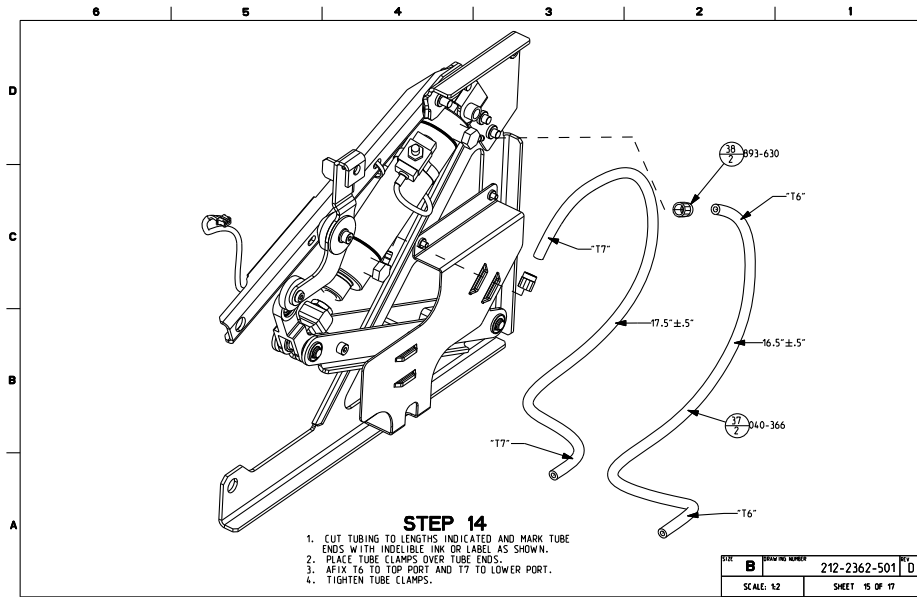
SCALE: 1:1

SHEET 2 OF 17









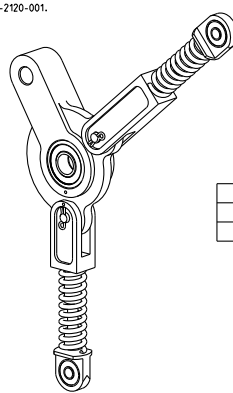
212-2256-501 ASSY, WHEEL, ACTUATOR

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-1717-001	WHEEL,ACTUATING	1
4	212-1910-001	RETAINER,LINK	2
5	807-003	SCREW,CAP HD SKT,M3X8 SST	2
6	801-003	WASHER,FLAT,M3 SST	2
7	212-1729-001	SHAFT,SLIDER,UPPER	1
8	212-1724-001	CLEVIS,SLIDER,UPPER	1
9	691-316	SPRING,CPRSN,,500ODX2.06 MW	2
10	212-1728-001	SHAFT,LINK,LOWER	1
11	212-1725-001	CLEVIS,SLIDER,LOWER	1
12	891-025	LUBRICANT,LITHIUM GEL,368AX-1	0
13	674-197	PIN,COTTER,,125ID INTERNAL	2
14	212-1903-001	PIN,LINKAGE,CASSETTE CLAMP	2

NOTES: UNLESS OTHERWISE SPECIFIED

- INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
- UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
- BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
- 5XXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -5XX SERIES P.N.
- BUILD PER 992-2120-001.

REV	ECN	DATE
PB	NOT RELEASED	02/05/08
A	20080792	3/14/08
B	20081381	05/27/08
C	20100935	06/24/10
D	20101902	11/05/10

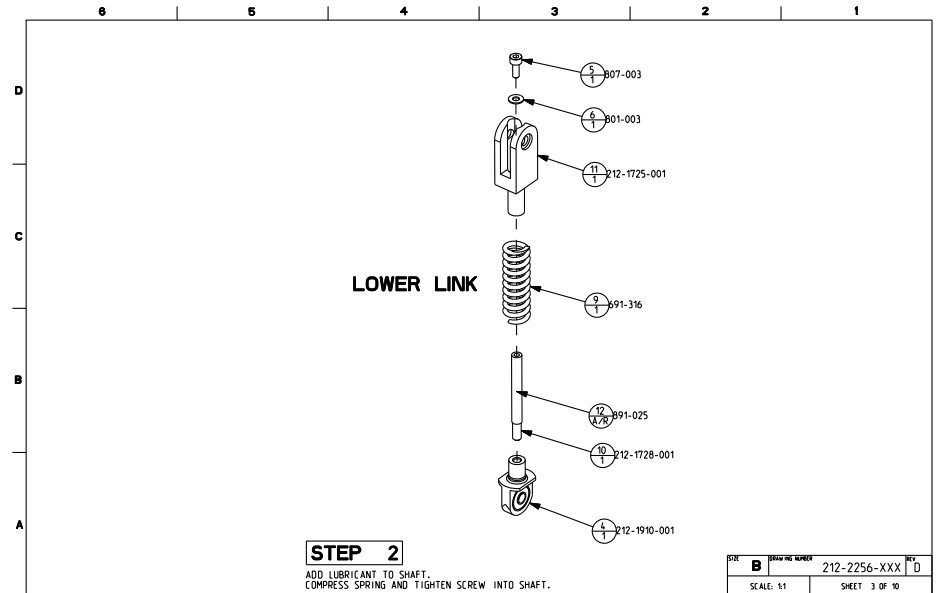
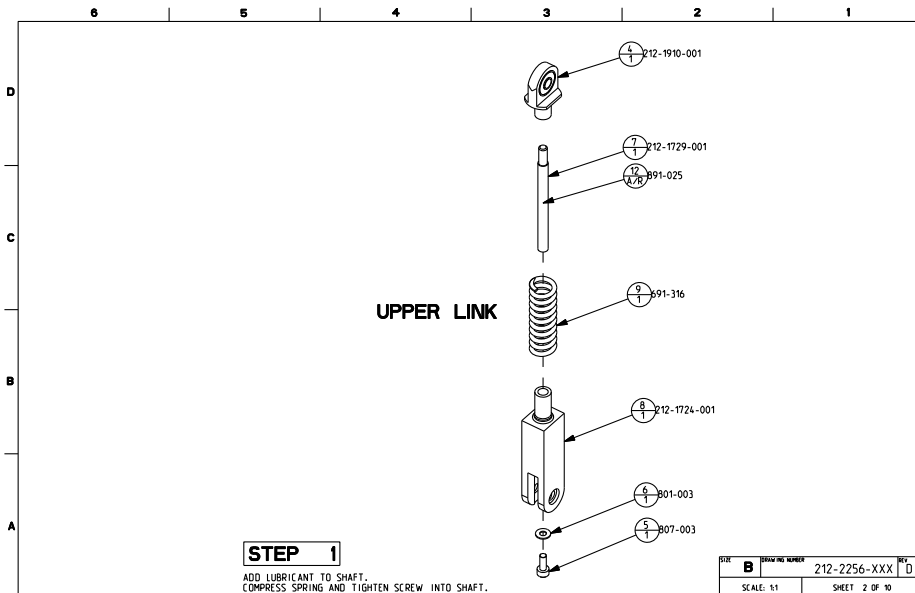


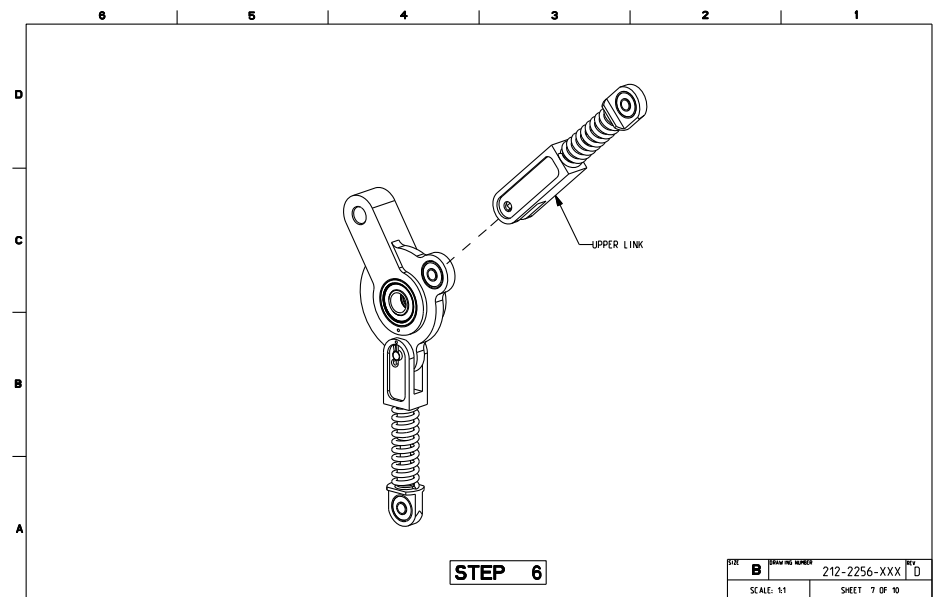
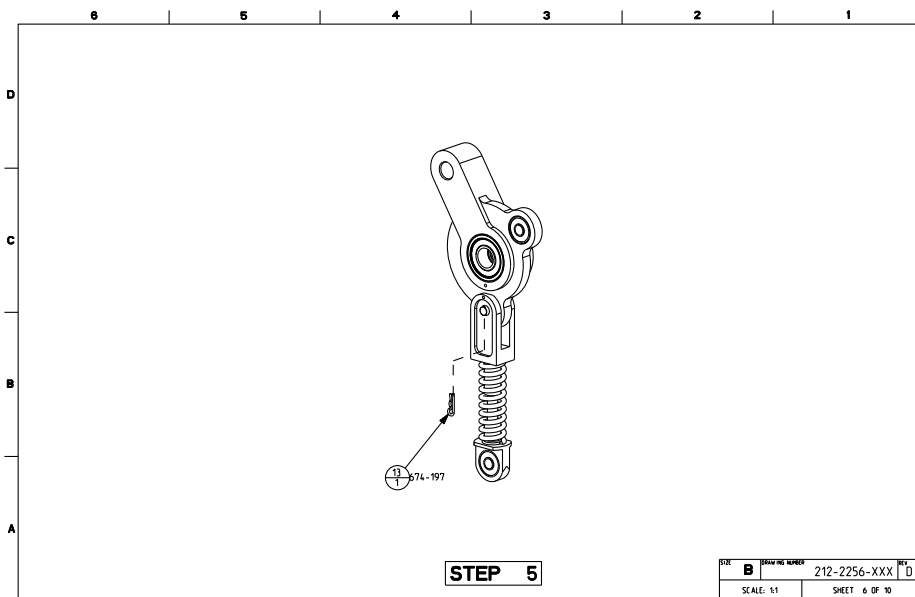
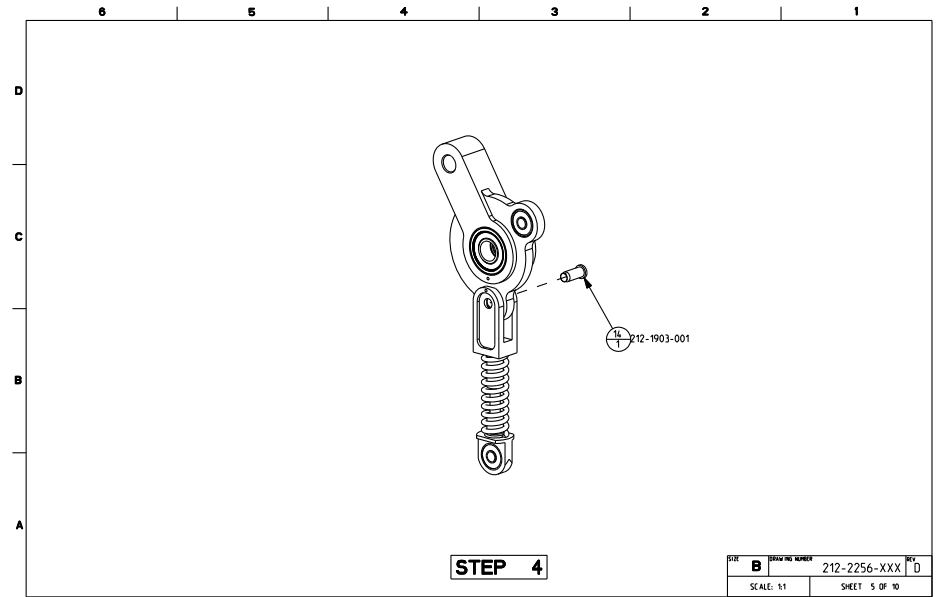
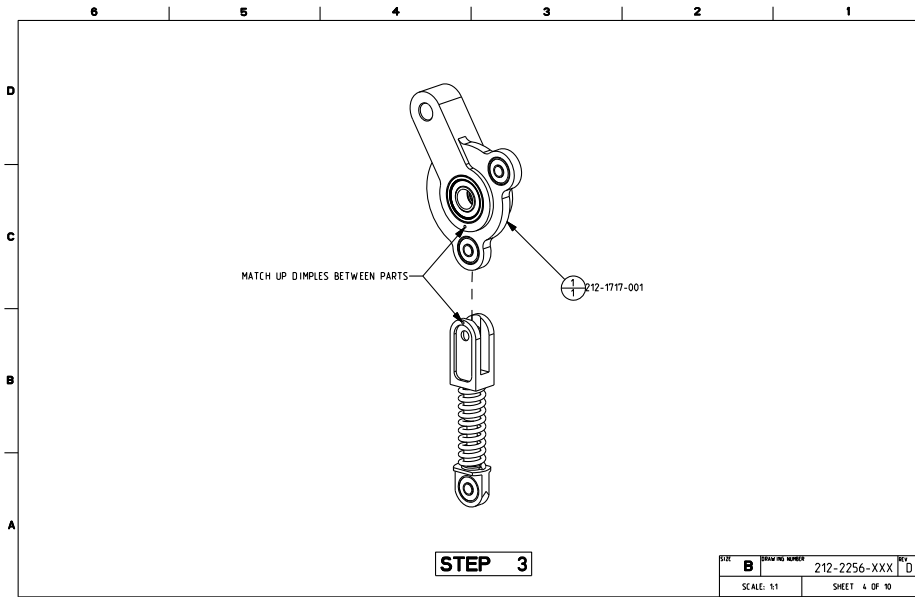
3D VIEW

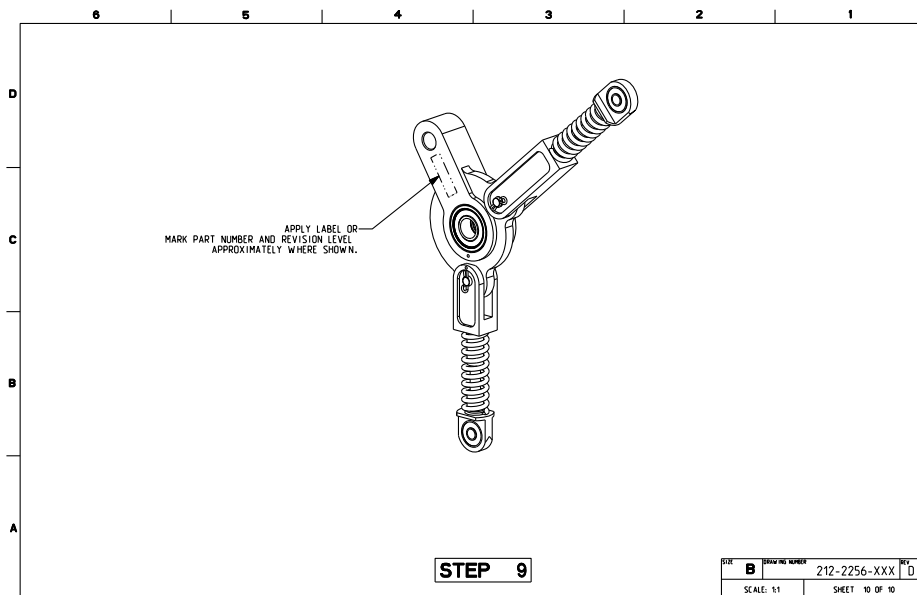
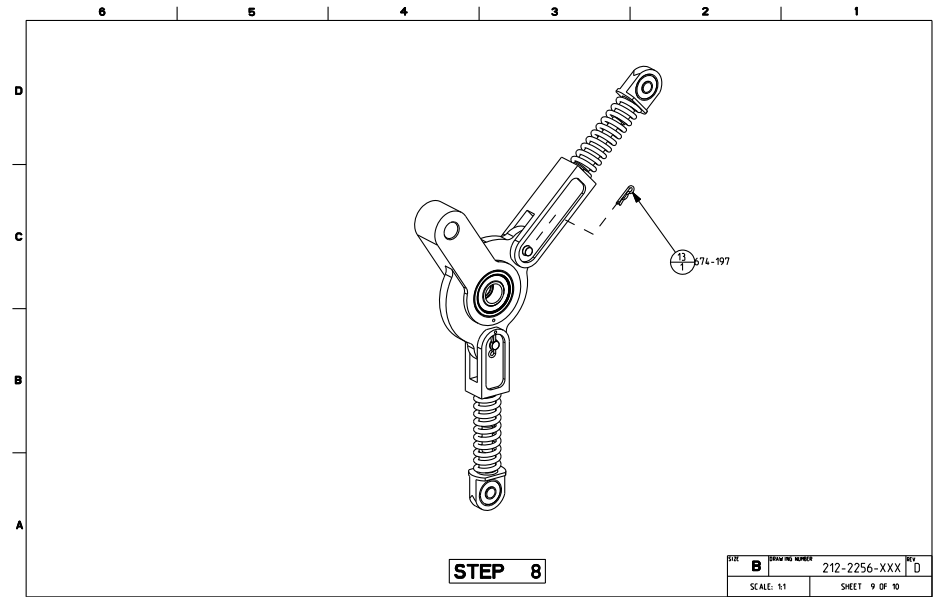
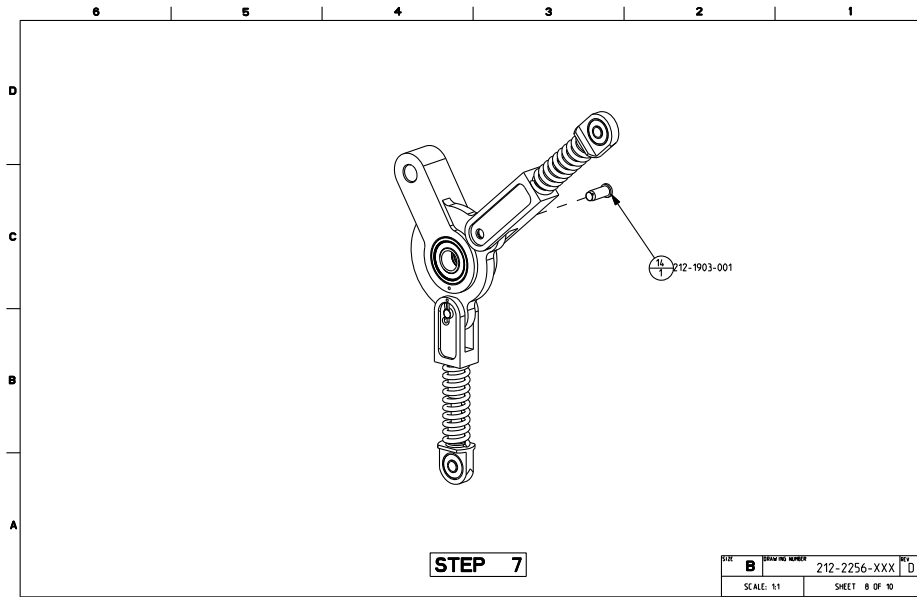
TABULATION			
PART NUMBER	PART NUMBER	REV	DESCRIPTION
212-2256-501	212-2256-501S	D	ASSY.WHEEL,ACTUATOR

SEE SEPARATE PART LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY J. ATHERLEY	DATE 2/7/07	<div style="display: flex; align-items: center;"> <div style="margin-left: 5px;"> <p>THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION. IT IS THE PROPERTY OF ALCON. IT IS TO BE USED ONLY FOR THE PURPOSES OF THE PROJECT AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF ALCON.</p> </div> </div>		<p>DESCRIPTION: ASSY.WHEEL,ACTUATOR</p> <p>ITEM B DRAWING NUMBER 212-2256-XXX REV D</p> <p>SCALE: 1:1 SHEET 1 OF 10</p> <p>VERSION: D.4</p>
CHECKED N. KING	DATE 2/7/07			
APPROVED A. HAHN	DATE 2/7/07			
DATE REVIEW 2/23/2007				
POMLINK MODEL ATTRIBUTES		NAME: 212-2256-XXX		







212-2187-501 ASSY, ACTUATOR, LATCH ILLUM

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2189-001	GUIDE,ACTUATOR,LATCH ILLUM	1
002	212-2188-001	BRACKET,ACTUATOR,LATCH ILLUM	1
003	773-111	RING,RETAINING,EXT .75 SHAFT	1
004	212-2190-001	BUTTON,ACTUATOR,LATCH ILLUM RT	1
007	212-2192-001	LEVER,ACTUATOR,LATCH ILLUM	1
010	212-2585-001	CABLE ASSY,ILLUM, TABLE TOP	1
011	800-003	WASHER,SPLITLOCK,M3 SST	2
012	800-103	WASHER,EXT LOCK,M3 SST	2
013	803-003	NUT,HEX,M3X.5 SST	1
014	809-116	SCREW,BTN HD SKT,M3X5 ND SST	1
015	212-3364-002	CABLE,ASSY,TT GND STRAP	1
016	798-339	WASHER,SHLDR,NO.6 SST	1
017	807-013	SCREW,CAP HD SKT,M4X8 SST	1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) IN BOTTOM.
4. BUILD PER 992-2120-001.
5. SXXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -SXX- SERIES P/N.

REVISION HISTORY

REV	ECN	DATE
P19	NOT RELEASED	02/28/08
A	20000603	13/11/08
B	20100935	06/30/10
C	CNO17206ECN	15/04/11
D	CNO30407ECN	12/10/12

3D VIEW
SCALE 1:1

TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-2187-501	ASSY,ACTUATOR,LATCH ILLUM	212-2187-501S	D	ASSY,ACTUATOR,LATCH ILLUM SVC

SEE SEPARATE PART LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	212-2187-501	ASSY,ACTUATOR,LATCH ILLUM		

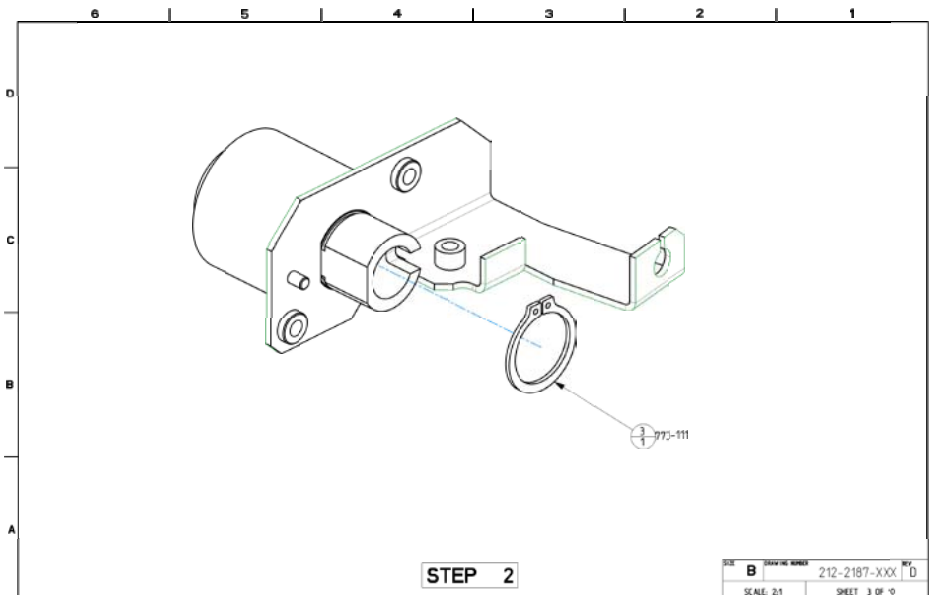
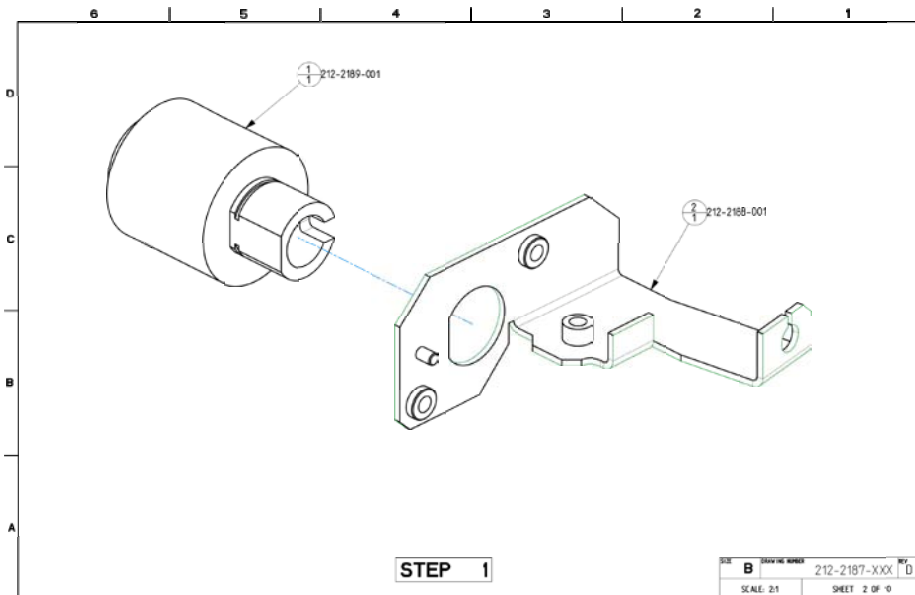
APPROVED: J. ATHERLEY DATE: 02/08/07
CHECKED: B. LEE DATE: 02/08/07
APPROVED: J. UNDERWOOD DATE: 02/08/07
FINAL REVIEW: 2/23/2007

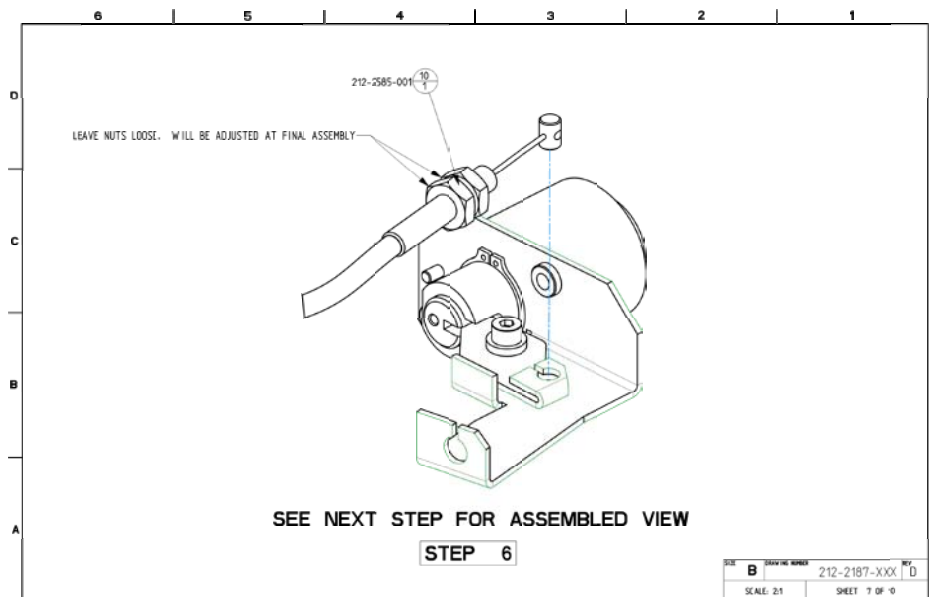
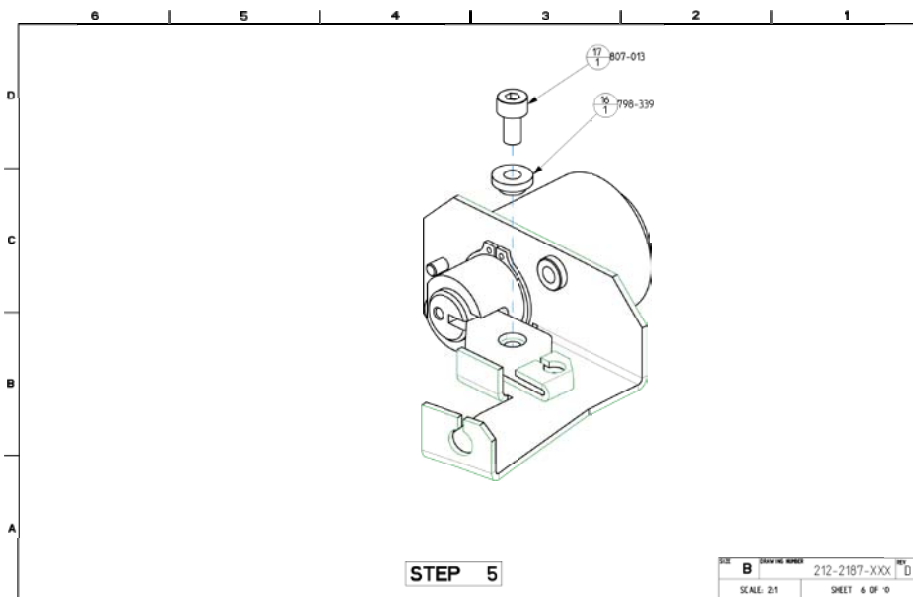
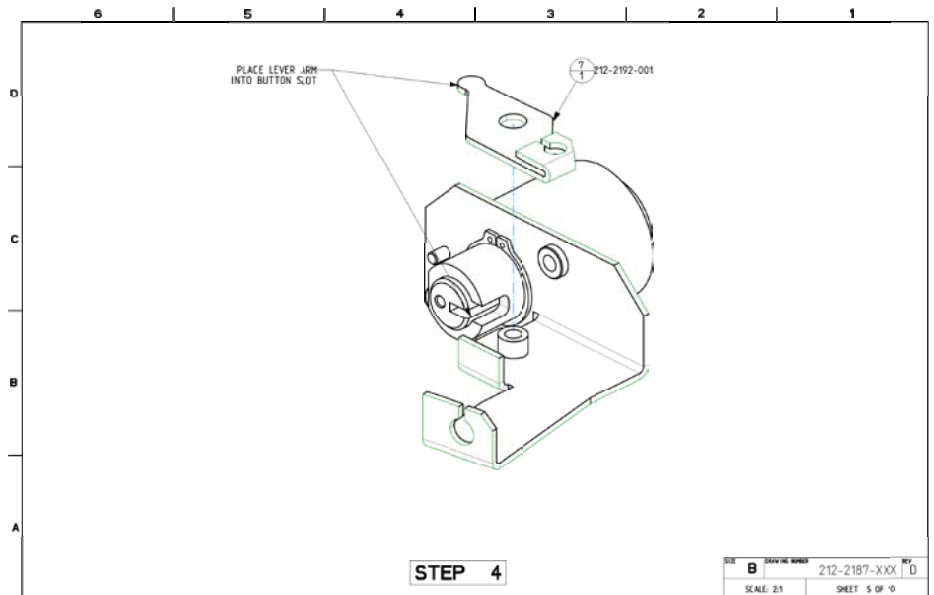
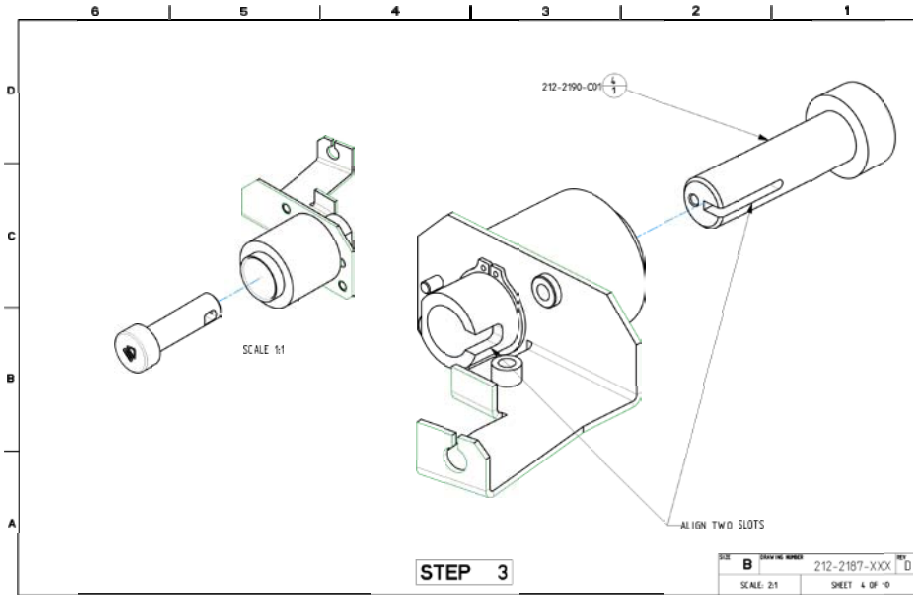
THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF ALCON.

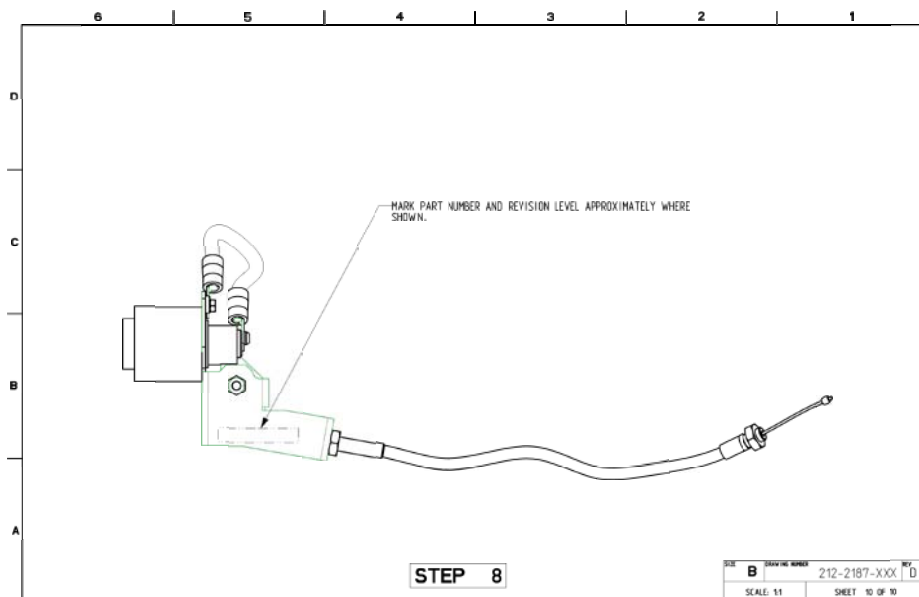
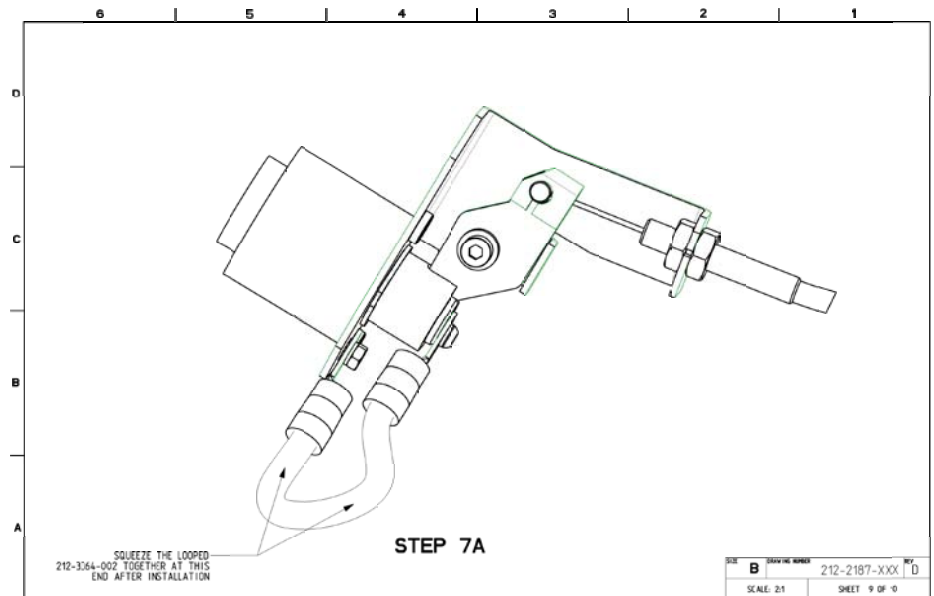
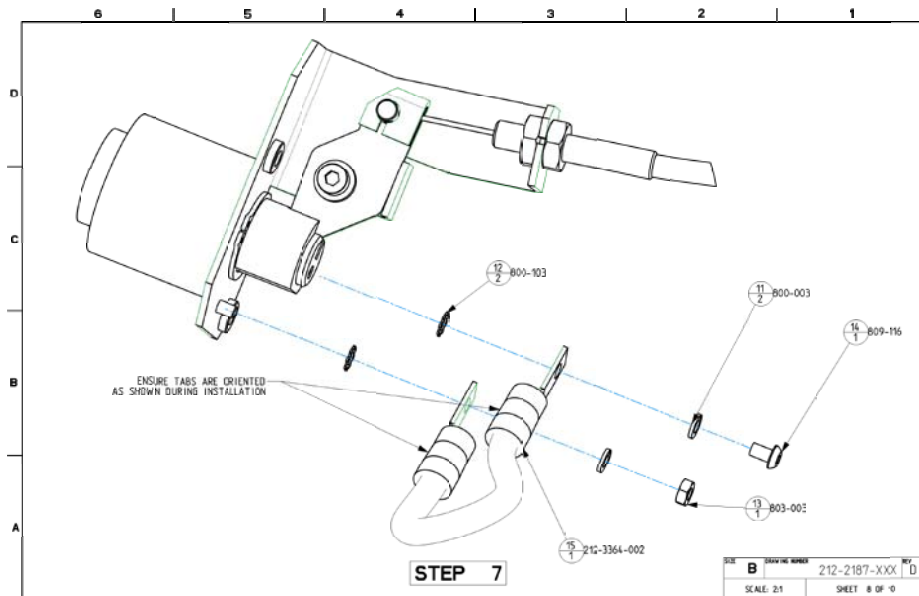
Alcon
IRVINE, CALIFORNIA 92614

DESCRIPTION: ASSY,ACTUATOR,LATCH ILLUM
SIZE: B DRAWING NUMBER: 212-2187-XXX REV: D
SCALE: 2:1 SHEET 1 OF 10
VERSION: B.1

PDM LINK MODEL ATTRIBUTES NAME: 212-2187-501.PROD





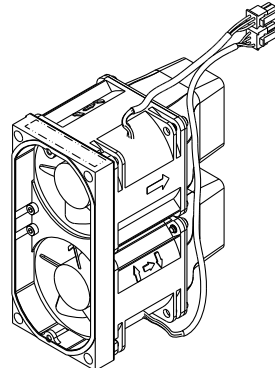


212-2875-501 ASSY, FAN, TT ILLUM

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-2899-001	SPACER ASSY,EXH FAN,TT ILLUM	1
2	212-2267-002	CABLE ASSY,FAN,W28	1
3	807-002	SCREW,CAP HD SKT,M3X6 SST	16
4	212-2268-002	CABLE ASSY,FAN,W29	1
5	212-2422-001	REDUCER,DUCT	2

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. $\frac{X}{Y}$ BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM
4. BUILD PER 992-2120-001.



SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY J.MCGUIRE		DATE 04/09/07	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION OF ALCON.	
CHECKED C.RUELAS		DATE 04/10/07	ALCON	
APPROVED J.UNDERWOOD		DATE 04/10/07	ALCON	
FORMAL REVIEW 2/23/2007		SCALE: 9:10		
PDM LINK MODEL ATTRIBUTES		NAME: 212-2875-501_PROC		VERSION: C.1

REVISION HISTORY

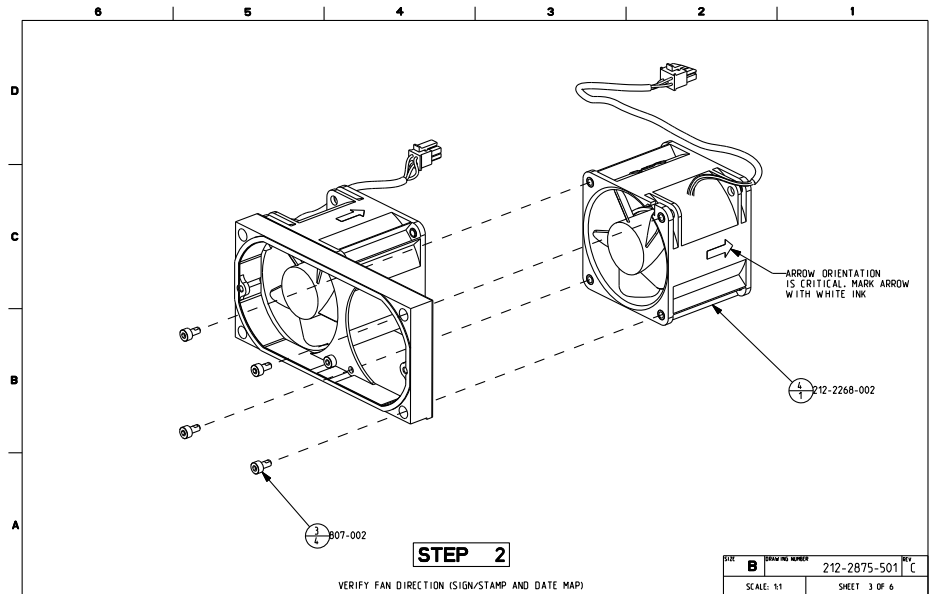
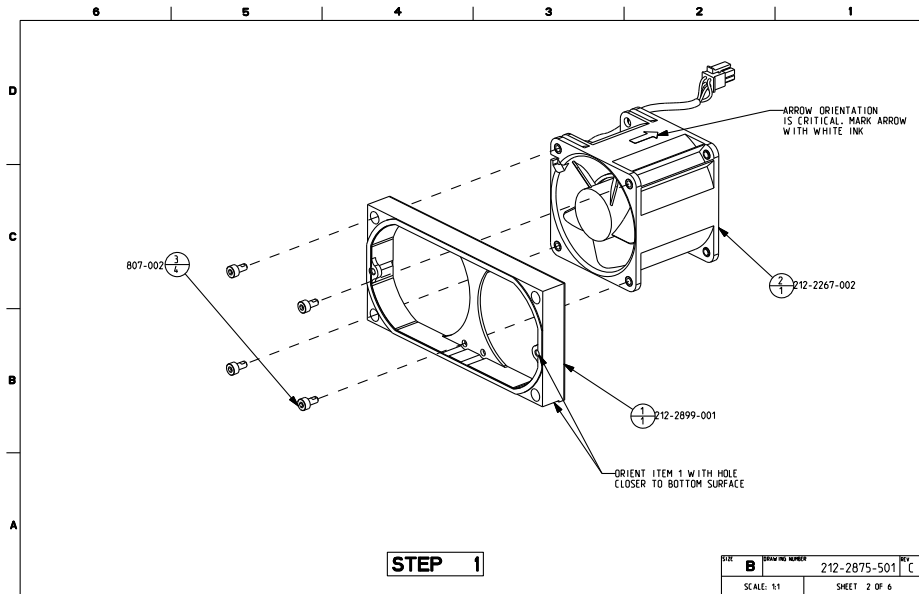
REV	ECN	DATE
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A	20080481	02/12/08
B	20091688	09/11/09
C	20100946	06/17/10

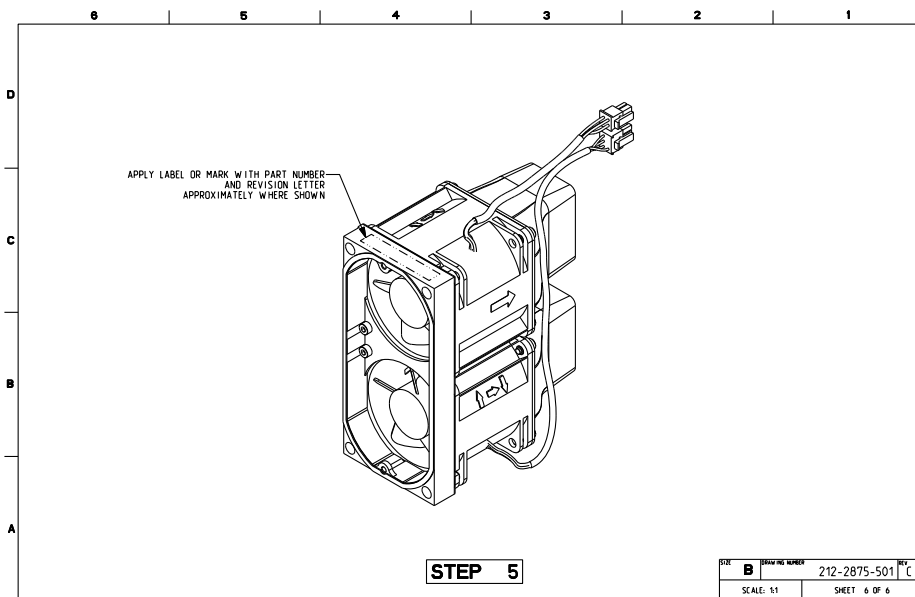
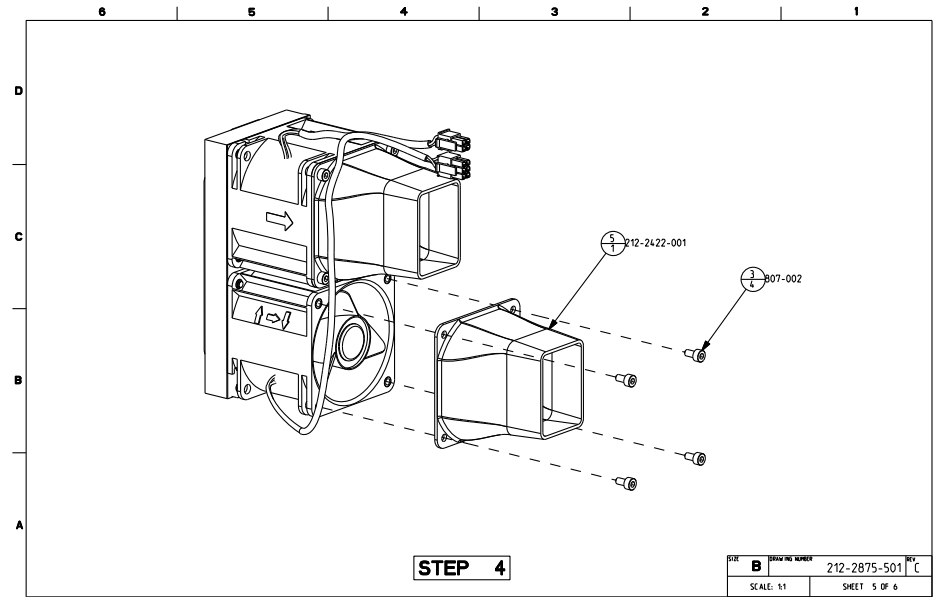
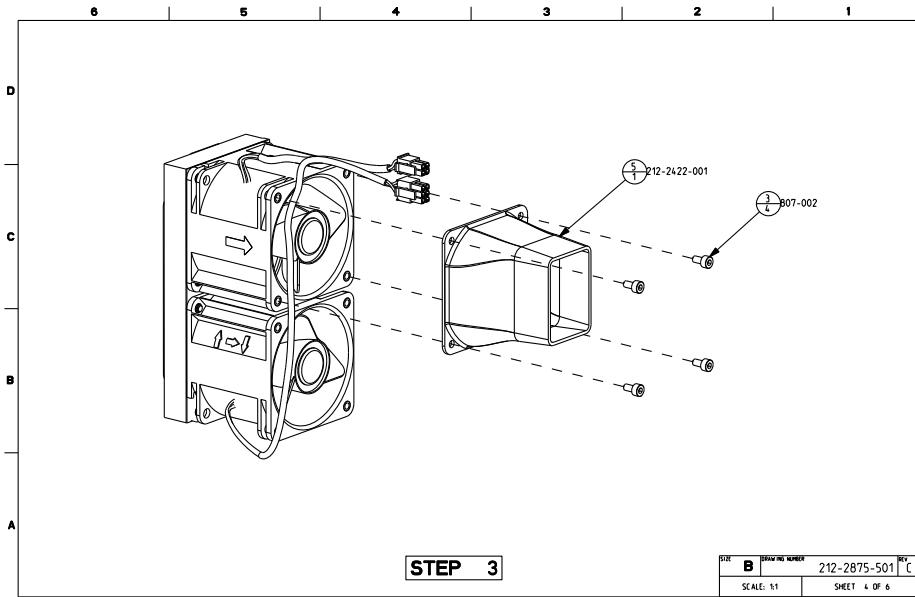
ASSY.FAN.TT ILLUM

212-2875-501

SCALE: 9:10

SHEET 1 OF 6







212-2981-501 ASSY, GAS AGF, EXTERNAL

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2848-001	TUBING, 1/8X1/16, RED 85A	1
002	212-2849-001	TUBING, 5/32X1/16, BLUE 85A	1
003	212-2996-001	CONNECTOR, GAS, AFG REAR	1
004	774-173	O-RING, .114X.070, VITON	1
005	774-175	O-RING, .301IDX.441OD, VITON	1
006	892-368	ADHESIVE, PERMABOND, LH150	1
007	893-650	FITTING, PLUG, M3X5MM SST	1
008	893-734	FITTING, M6X4MM, TUBE HEX HEAD	1
009	893-733	FITTING, 10-32X.125, TUBE HEX HD	1
010	893-661	FITTING, COUPLING, 1/8 NPT BRS	1
011	893-662	FITTING, COUP, 1/8 NPT NF BRS	1
012	893-741	FITTING, ELBOW, MALE 10-32 .25OD	1
013	893-752	FITTING, ELBOW, 4MM M6X1.0	1
014	893-666	FITTING, ADAPTER, 1/8X10-32 SST	1
015	893-669	FITTING, ADAPTOR, 1/8XM6 SST	1
016	689-005	BAG, RECLOSE PLSTC, 6X8X.004	1

NOTES: UNLESS OTHERWISE SPECIFIED

- INTERPRET THIS DRAWING PER ASME Y14.5M AND AICON SPECIFICATION 701-026.
- UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
-  BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
- * XX IN-LBS * INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE $\pm 10\%$ OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
-  -SKIS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -SXX SERIES P/N
- BUILD PER 992-2120-040 AND TEST PER 907-2120-050

REVISION HISTORY

REV	ECN	DATE
P1	NOT RELEASED	01/24/08
A	20080307	02/07/08
B	20082039	08/08/08
C	20082507	09/29/08
D	20100959	06/18/10
E	EN046470ECN	08/13/13
F	EN056771ECN	07/28/14

TABULATION

PART NUMBER	PART NUMBER	REV.	DESCRIPTION
212-2981-501	212-2981-501S	F	ASSY, GAS AGF, EXTERNAL

3D VIEW

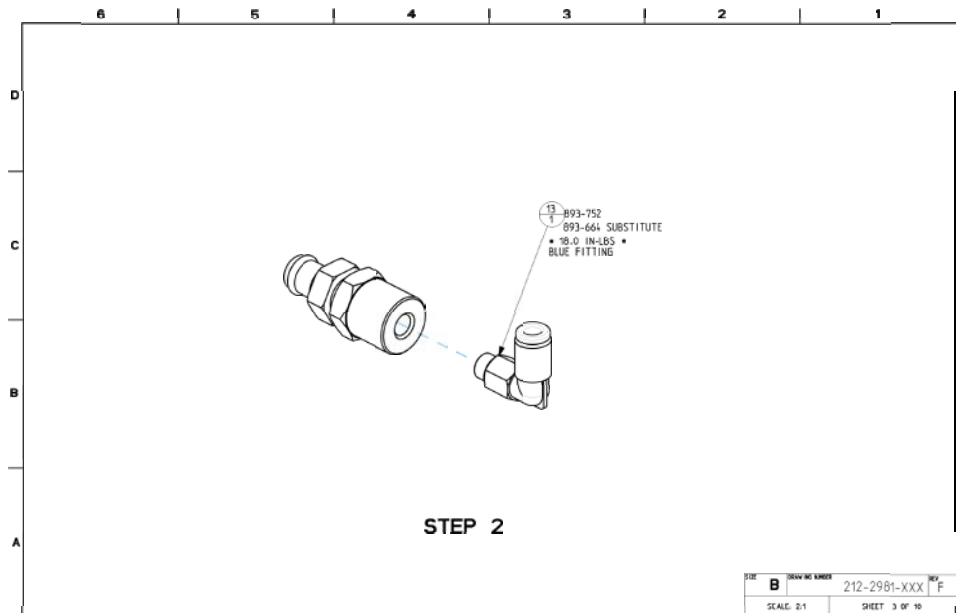
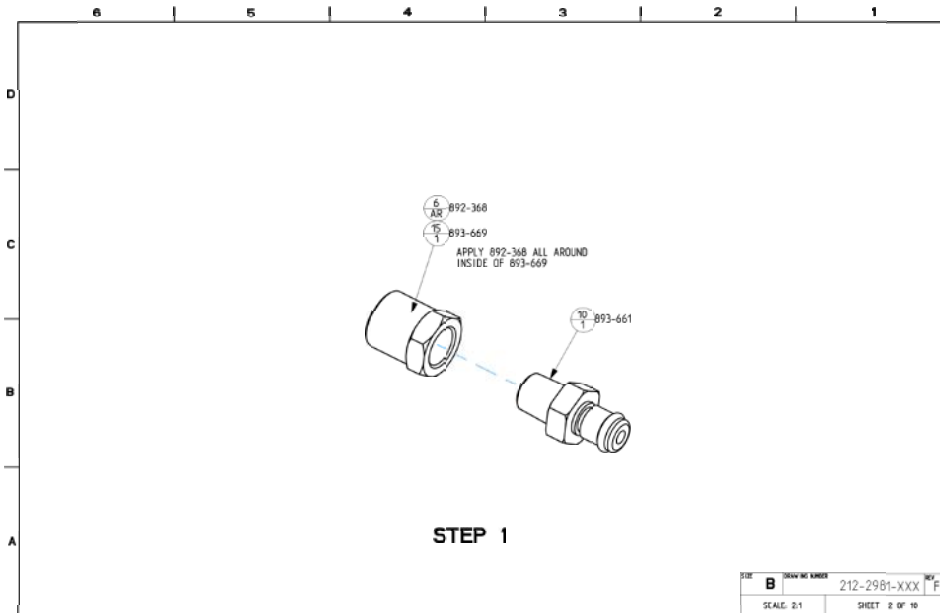
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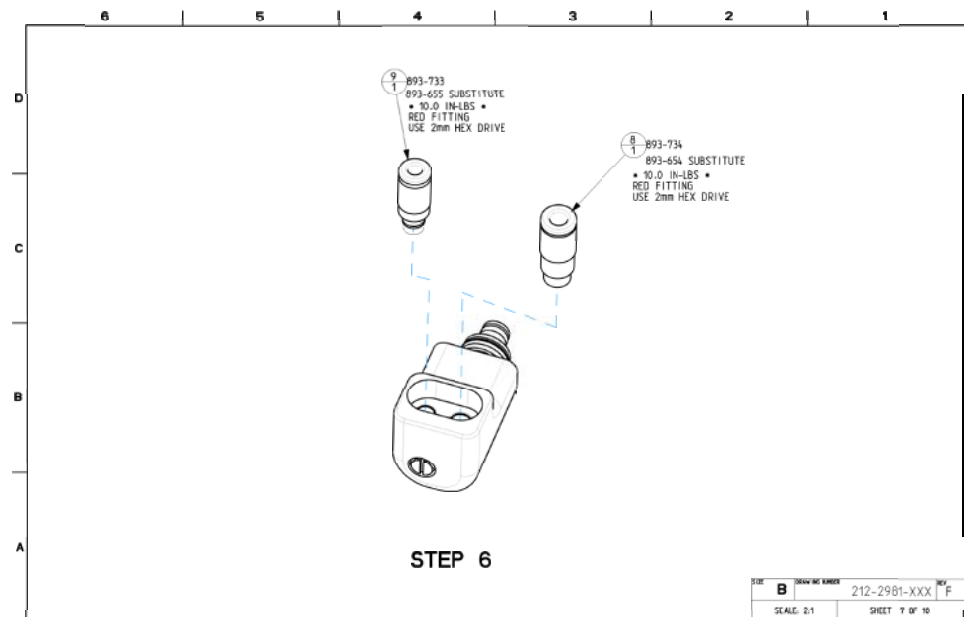
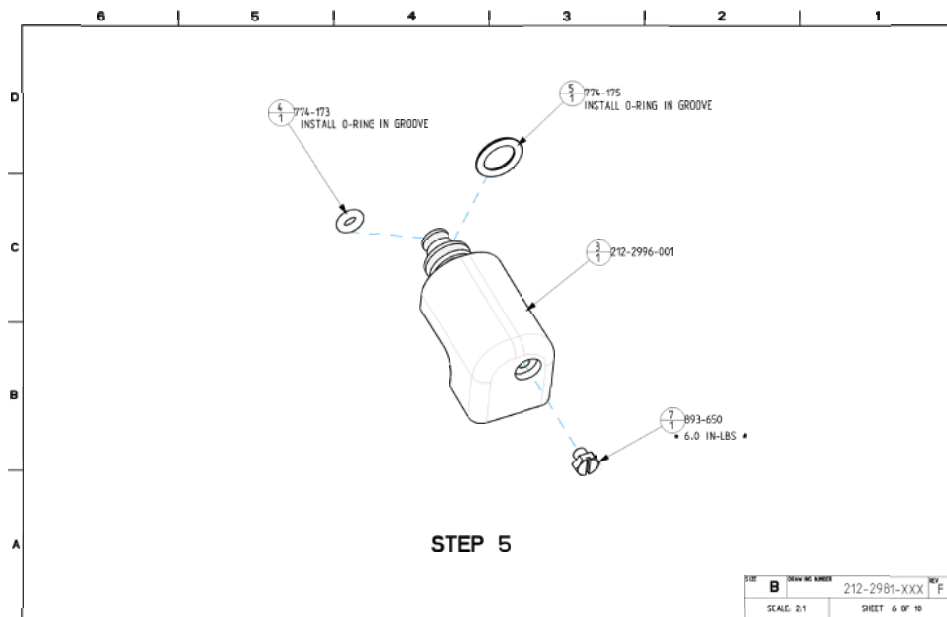
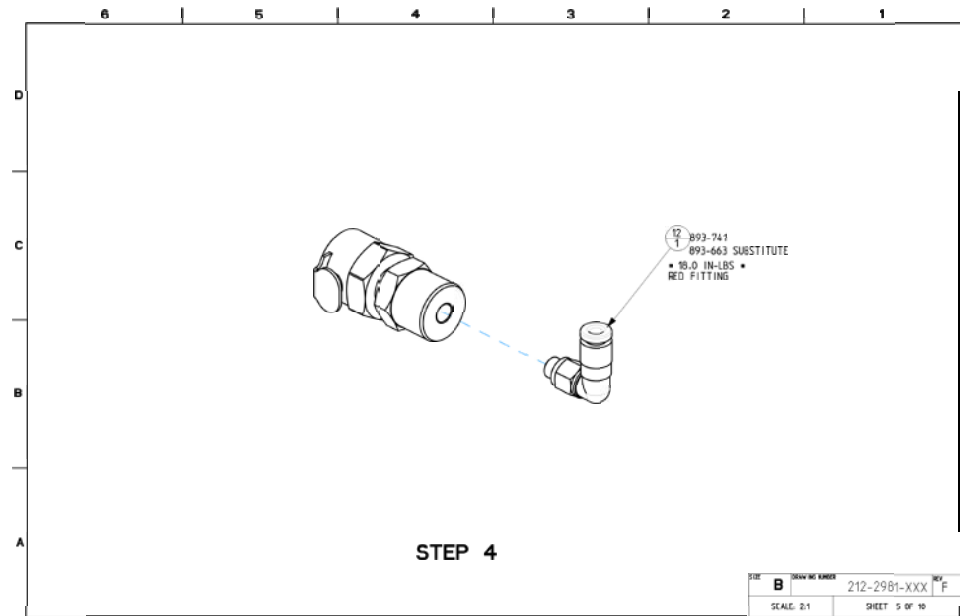
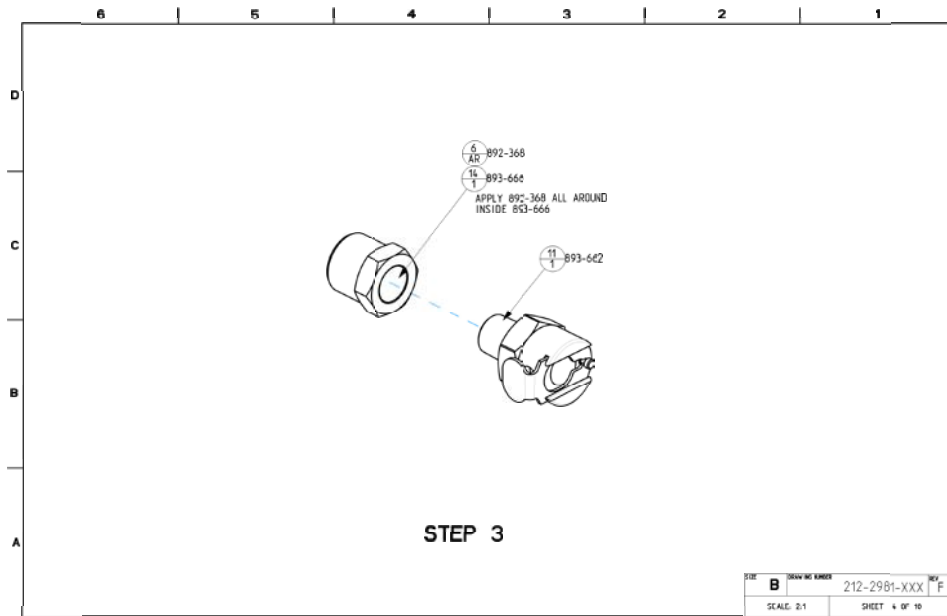
QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	212-2981-501	ASSY, GAS AGF, EXTERNAL		

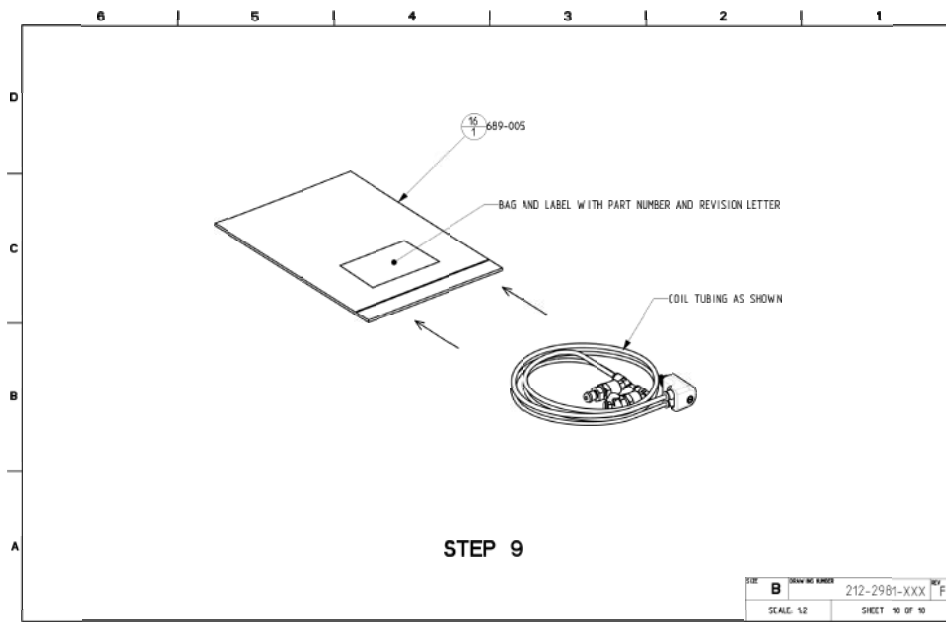
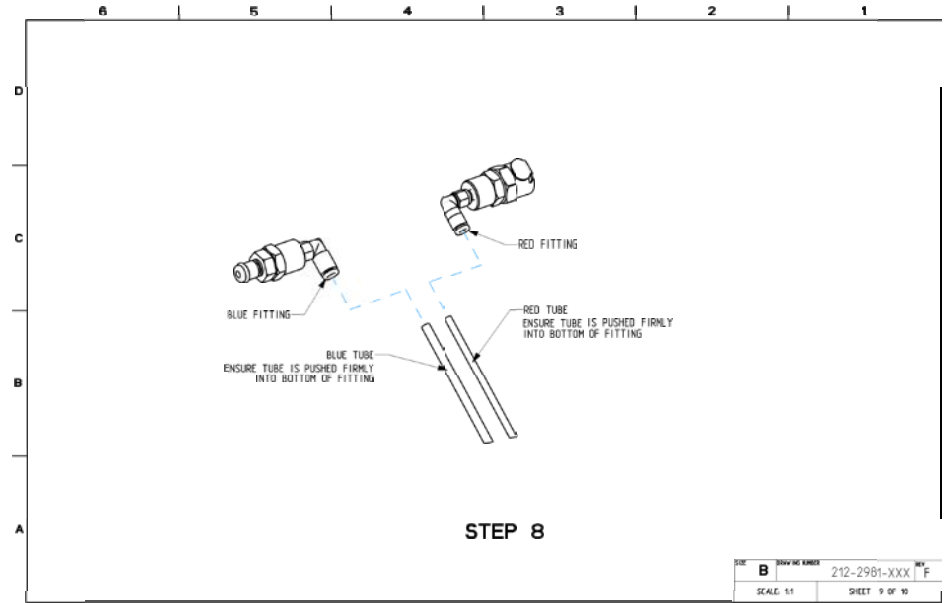
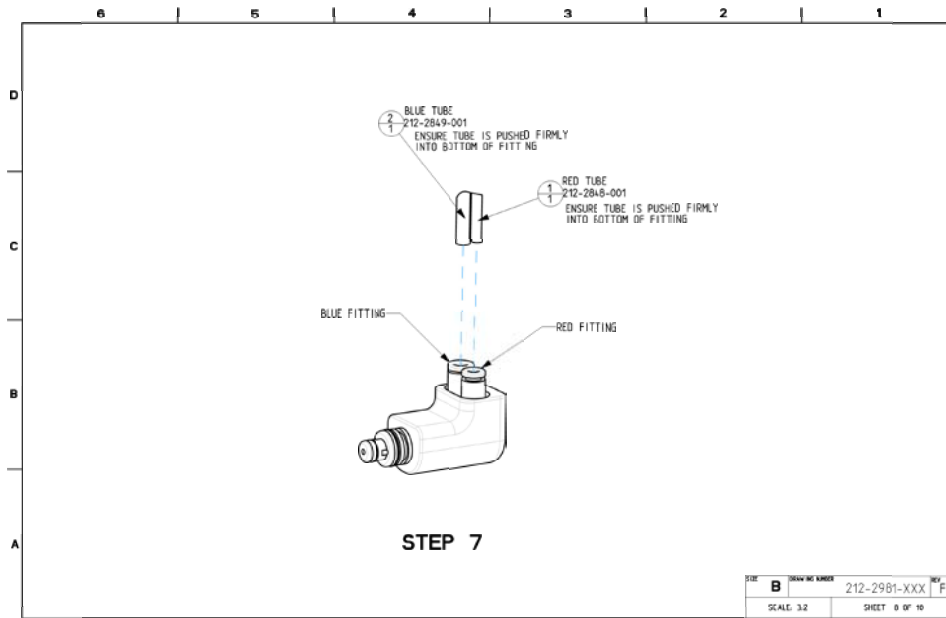
APPROVED

BY	DATE	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION OF AICON.
R. PALIND	10/03/07	
J. MUELLER	10/03/07	
D. TURNER	10/03/07	
PRINT REVISION	2/23/2007	

PDM LINK MODEL ATTRIBUTES NAME: 212-2981-501.PDOC VERSION: F.2







212-5003-501 ASSY, BASE, PREMIUM

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	023-084	CABLE ASSY,PWR CORD,12FT	1
002	026-143	CLAMP,CABLE .31X.38,BLK NYL	1
003	027-003	CABLE TIE,.625X3.50L,NYLON	7
004	027-009	CABLE TIE,3.00X11.00L,NYLON	9
005	054-278	CONNECTOR,AC POWER,3 PRONG	1
006	070-000	POST,BINDING,M6X15 BRS/NKL PLT	1
007	212-1007-501	ASSY,LASER	1
008	212-1008-501	ASSY,ILLUMINATOR,AUX	1
009	212-1561-009	CABLE ASSY,24V,DC W10	1
010	212-1642-002	GROMMET,INTERCONNECT,CUT	1
011	212-1646-501	ASSY,BASE,SWITCH	1
012	212-1678-001	CABLE ASSY,FOOTSWITCH,W01	1
013	212-1727-501	ASSY,PCB,INTERFACE BREAKOUT	1
014	212-1957-001	DUCT,INTERFACE,NGL	1
015	212-1959-001	BRACKET,REAR,INTERFACE CONN	1
016	212-1996-001	CABLE ASSY,NGL,REAR INTF	1
017	212-2019-001	CABLE ASSY,GROUND EQUI W12	1
018	212-2048-502	ASSY,PANEL,LASER REAR CART IEC	1
019	212-2164-501	ASSY,POWER DISTRIBUTION,CART	1
020	212-2342-502	ASSY,BRACKET,UPPER CYL MTG PCH	1
021	212-3292-SSC	KIT,SSC,BASE CONST	1
022	212-2456-001	DUCT,OUTER,AUX ILLUM	1
023	212-2469-001	BRACKET,TRAY ARM,MACHINED	1
024	212-2470-001	BRACKET,IV POLE,MACHINED	1
025	212-2472-501	ASSY,PANEL,CONN DUCT AUX ILLUM	1
026	212-2473-001	BRACKET,FOOT,TOP REAR MACHINED	2
027	212-2543-001	WASHER,TAPERED,PCBA	4
028	212-2665-501	ASSY,PCB,INTERFACE EXTENDER	1
029	212-2715-501	ASSY,ACTUATOR,LATCH ILLUM	1
030	212-2781-SSC	KIT,SSC,HARN ASSY BOT CONSOLE	1
031	212-2832-001	CABLE ASSY,GROUND,W37	1
032	212-2833-001	CABLE ASSY,GROUND,W38	1
033	212-2842-001	COVER,BRACKET,TRAY ARM RIGHT	1
034	212-2843-001	COVER,BRACKET,TRAY ARM LEFT	1
036	690-1121	LABEL,GROUND	1
037	691-347	SPRING,CPRSN,.328ODX1.250 MW	4
038	767-097	NUT,HEX,4-40X.217X.066 SST	2

ITEM #	PART NUMBER	DESCRIPTION	QTY
039	796-131	WASHER,FLAT,.228X.437X.030 SST	4
040	796-137	WASHER,FLAT,.218X.375X.062 NYL	4
041	797-017	WASHER,SPLT LK.,19X.33X.05 SST	2
042	797-022	WASHER,SPLT LK.,25X.49X.06 SST	1
043	797-064	WASHER,EXT LOCK 20X.41X.03 SST	5
044	797-065	WASHER,EXT LOCK 26X.51X.03 SST	1
045	798-340	WASHER,SHLDR,NO.6 .125 LG SST	2
046	800-103	WASHER,EXT LOCK,M3 SST	4
047	801-003	WASHER,FLAT,M3 SST	4
048	801-004	WASHER,FLAT,M4 SST	7
049	801-006	WASHER,FLAT,M6 SST	6
050	801-039	WASHER,GRN/YEL,.241ID X.655 OD	1
051	803-006	NUT,HEX,M6X1 SST	2
052	787-667	SETSCREW,SKT HD,CUP 8-32X.125	1
053	807-002	SCREW,CAP HD SKT,M3X6 SST	6
054	807-004	SCREW,CAP HD SKT,M3X10 SST	8
055	807-013	SCREW,CAP HD SKT,M4X8 SST	3
056	807-014	SCREW,CAP HD SKT,M4X10 SST	7
057	807-015	SCREW,CAP HD SKT,M4X12 SST	6
058	807-017	SCREW,CAP HD SKT,M4X20 SST	4
059	807-043	SCREW,CAP HD SKT,M6X16 SST	4
060	807-044	SCREW,CAP HD SKT,M6X20 SST	4
061	807-051	SCREW,CAP HD SKT,M6X55 SST	2
063	809-007	SCREW,BTN HD SKT,M4X10 SST	1
064	809-103	SCREW,BTN HD SKT,M4X6 SST	8
065	811-002	SCREW,FLAT HD SKT,M3X8 SST	2
066	811-012	SCREW,FLAT HD SKT,M4X16 SST	8
067	811-032	SCREW,FLAT HD SKT,M6X16 SST	4
068	892-042	ADHESIVE,THREADLOCKER,242 BLUE	AR
069	212-2800-001	SLIDE,DRAWER,7.9LGX7.9 TRAVEL	2
072	807-058	SCREW,CAP HD SKT,M8X12 SST	4
073	212-1650-001	CAP,BASE	4
074	212-2553-501	ASSY,FILTER DUCT,CHASSIS	1
075	212-1101-001	PANEL,CART,RIGHT	1
076	212-1102-001	PANEL,CART,LEFT	1
077	212-2371-001	PANEL,TOP	1
078	212-2074-501	ASSY,PANEL,FRONT LOWER CART	1

ITEM #	PART NUMBER	DESCRIPTION	QTY
079	212-2047-501	ASSY,PANEL,FRONT UPPER CART	1
080	212-1970-501	ASSY,FILTER,AIR BASE UNIT	1
081	212-2044-501	ASSY,PANEL,LOWER REAR CART	1
082	212-2046-501	ASSY,PANEL,MIDDLE REAR CART	1
083	212-2045-501	ASSY,PANEL,REAR CART ILLUM	1
084	212-2049-501	ASSY,DRAWER,NGVS	1
085	212-3248-SSC	KIT,SSC,BASE SHT METAL/SKINS	1
AR = As Required			

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-006.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REDUCED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (Q) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. 3D CAD CABLE INTERCONNECT FILE 212-5003-XXX.PRM_CABLE IS AN INTEGRAL FILE OF THIS DRAWING. SOME INSTALLED CABLE ASSEMBLIES ARE NOT SHOWN FOR CLARITY. ALL CABLE ROUTING AND FROM-TO CONNECTIONS CAN BE FOUND IN THIS FILE.
5. REFERENCE DESIGNATOR BREAKDOWN:
W2: CABLE ID
A/P: CONNECTION TO LASER ASSY. MODULE DESCRIPTION
6. R NUMBERS IDENTIFY CABLE ROUTING AND TIE-WRAP LOCATIONS ASSOCIATED WITH CABLES.
7. REFERENCE INTERCONNECT DIAGRAM 212-5003-801.
8. BUILD PER 992-2120-402 AND TEST PER 907-2120-003 FOR 212-5003-501 AND 212-5003-502.
9. BUILD PER 992-2120-040 AND TEST PER 907-2120-062 FOR 212-5003-503.

212-5003-501 SHOWN

REVISION HISTORY			
REV	ECN	DATE	
G	20083108	01/05/09	
H	20083142	01/14/09	
J	20090167	02/06/09	
K	20091661	09/29/09	
L	20100266	3/2/10	
M	20100957	06/25/10	
N	20101184	08/06/10	
R	CN07538ECN	06/07/11	
T	CN08793ECN	03/29/12	
U	CN05059SECN	01/24/14	
V	CN054903ECN	04/28/14	

TABULATION				
REV	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
T	212-5003-501	ASSY.BASE UNIT, PREMIUM	212-5003-501R	ASSY.BASE UNIT, PREMIUM REFURB
R	212-5003-502	ASSY.BASE UNIT, W/O LASER	212-5003-502R	ASSY.BASE UNIT, W/O LASER REFUR
V	212-5003-503	ASSY.BASE UNIT, W/O LASER/ILLUM	212-5003-503R	ASSY.BASE UNIT, W/O LASER/ILLUM REFUR

SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	J. ATERLEY	DATE	08/21/05	
DESIGNED	P. NGUYEN	DATE	08/21/05	
APPROVED	J. UNDERWOOD	DATE	08/21/05	
FORM REVISION	2/23/2007			
POM INK MODEL ATTRIBUTES		NAME: 212-5003-501.PDOC		
		VERSION: T.3		

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE DISCLOSED TO OTHERS OR USED FOR ANY PURPOSE WITHOUT THE WRITTEN PERMISSION OF ALCON

Alcon
10000 CALIFORNIA ROAD

DESCRIPTION: ASSY.BASE UNIT, PREMIUM

SIZE: B DRAWING NUMBER: 212-5003-XXX REV: V

SCALE: 1:10 SHEET 1 OF 52

212-3292-SSC

STEP 1

SIZE	DRAWING NUMBER	REV
B	212-5003-XXX	V

SCALE: 33:200 SHEET 2 OF 52

NOTE: USE FIXTURE P/N 995-2120-886 FOR EASE OF GRIP.

STEP 2

SIZE	DRAWING NUMBER	REV
B	212-5003-XXX	V

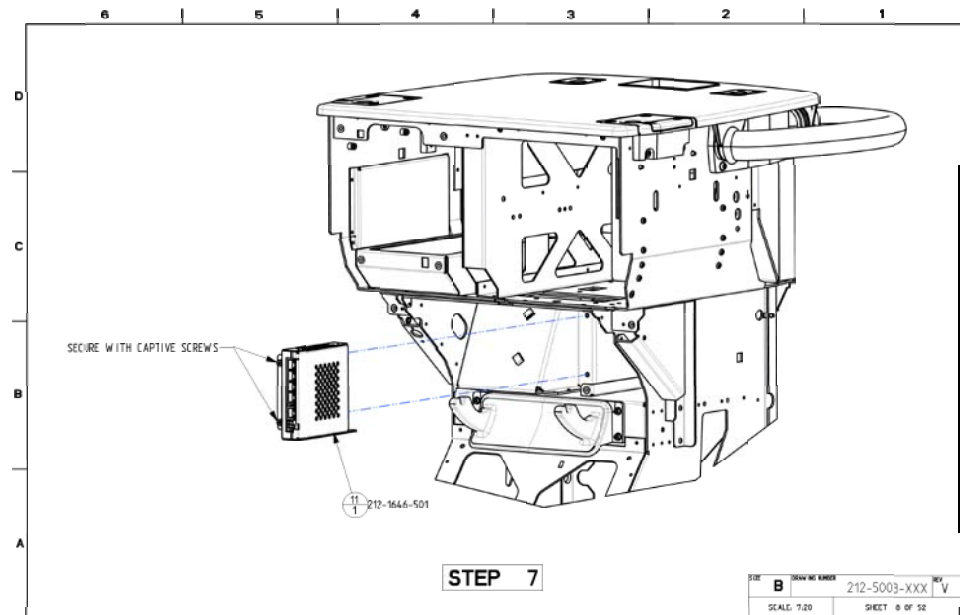
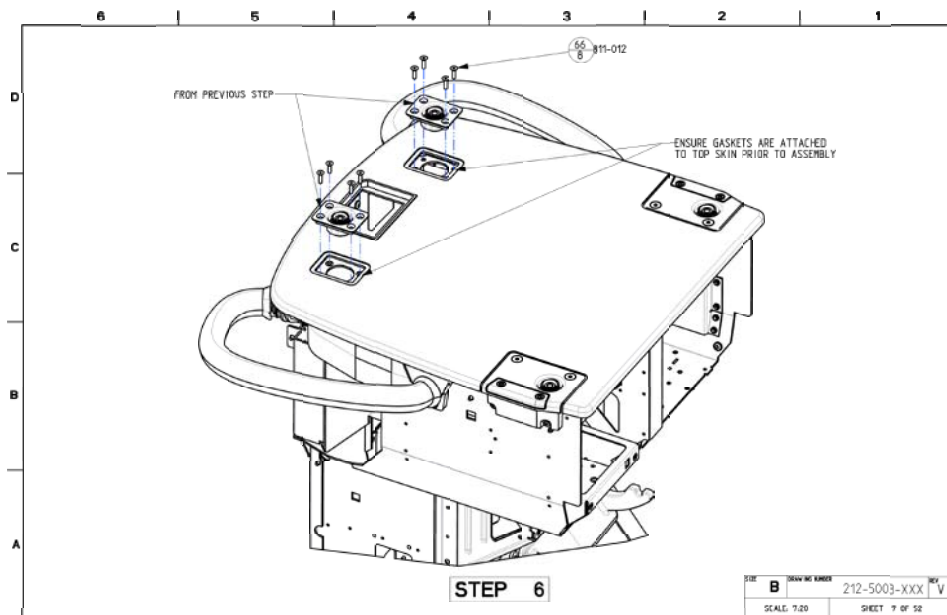
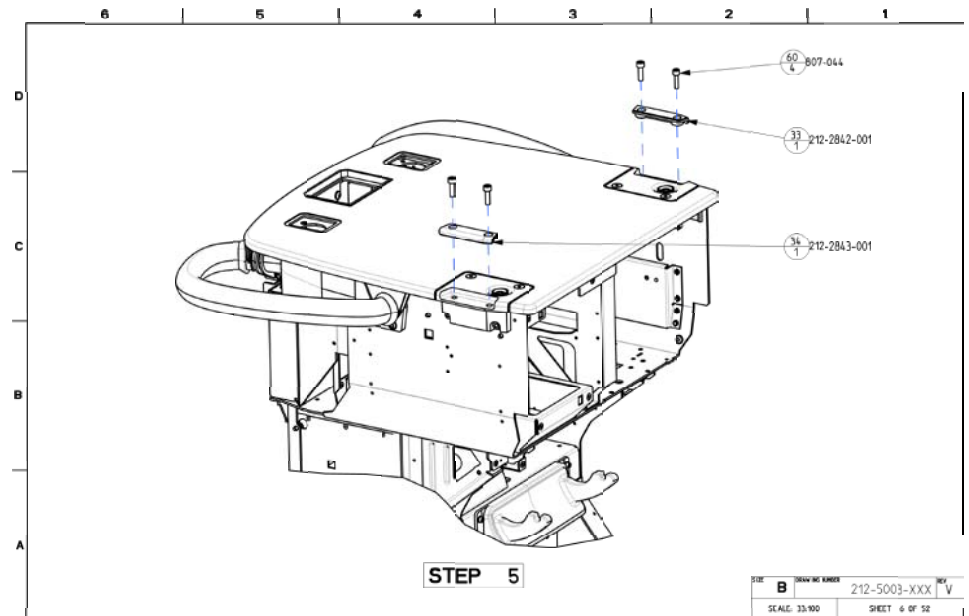
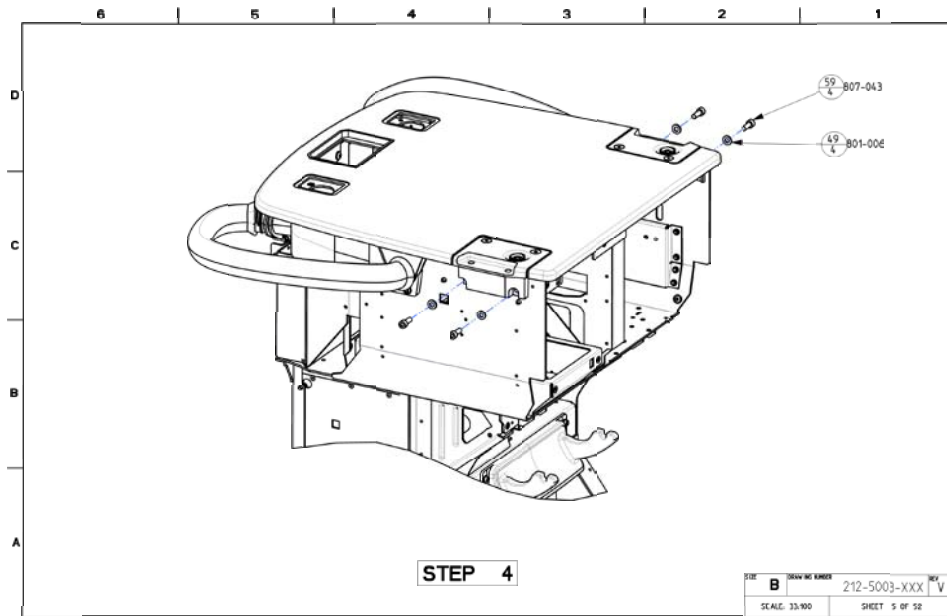
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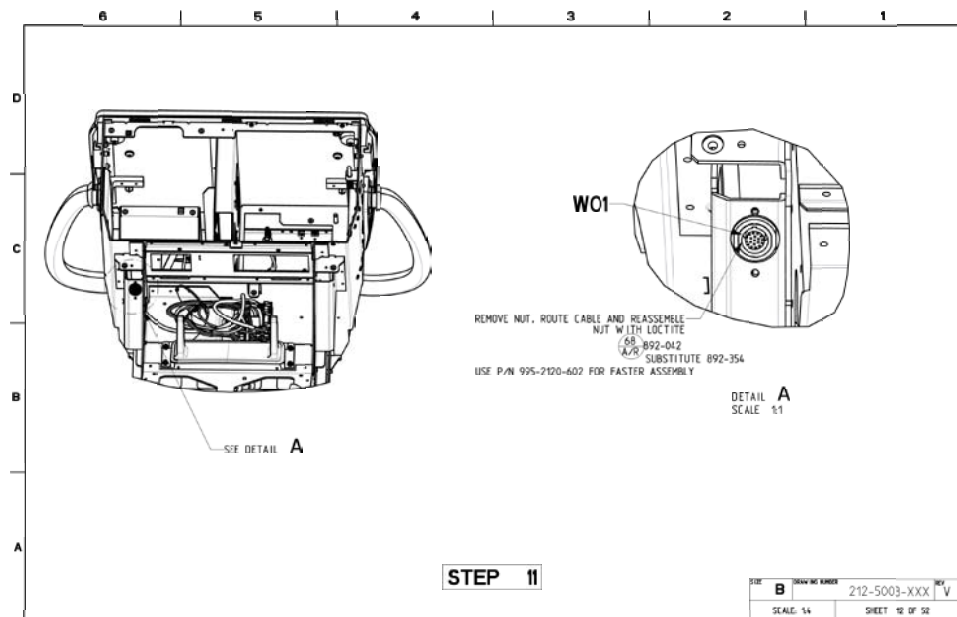
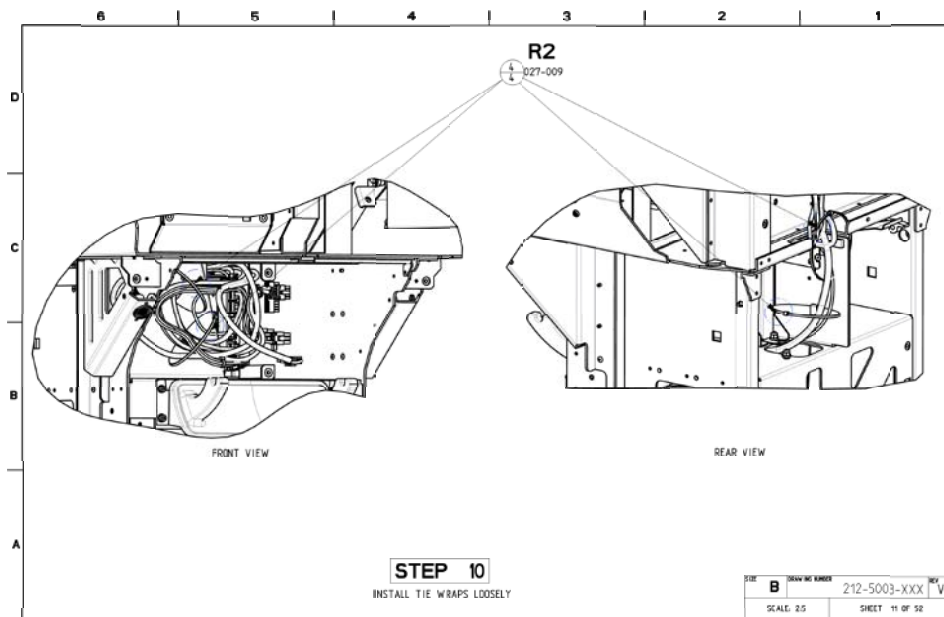
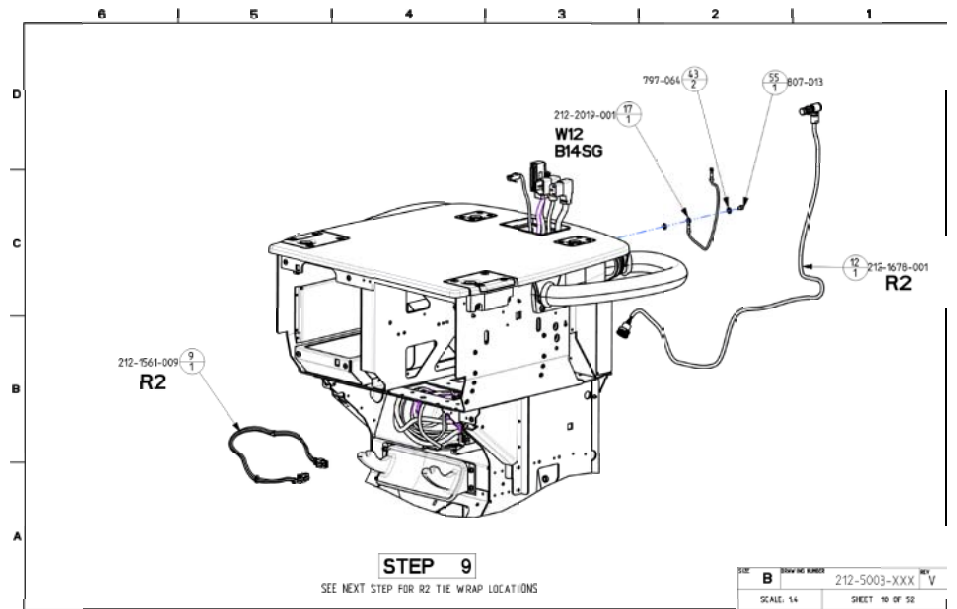
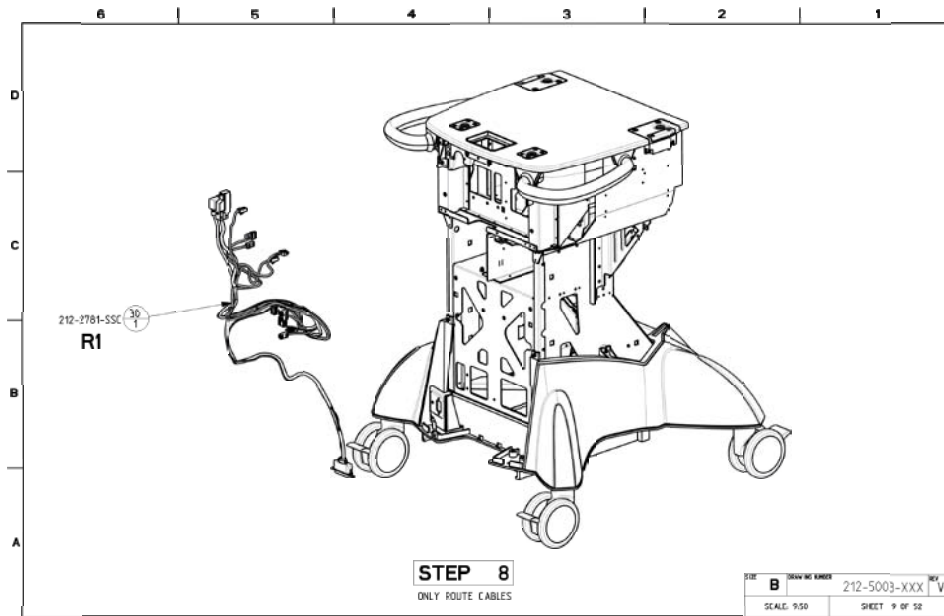
ENSURE GASKETS ARE ATTACHED TO TOP SKIN PRIOR TO ASSEMBLY

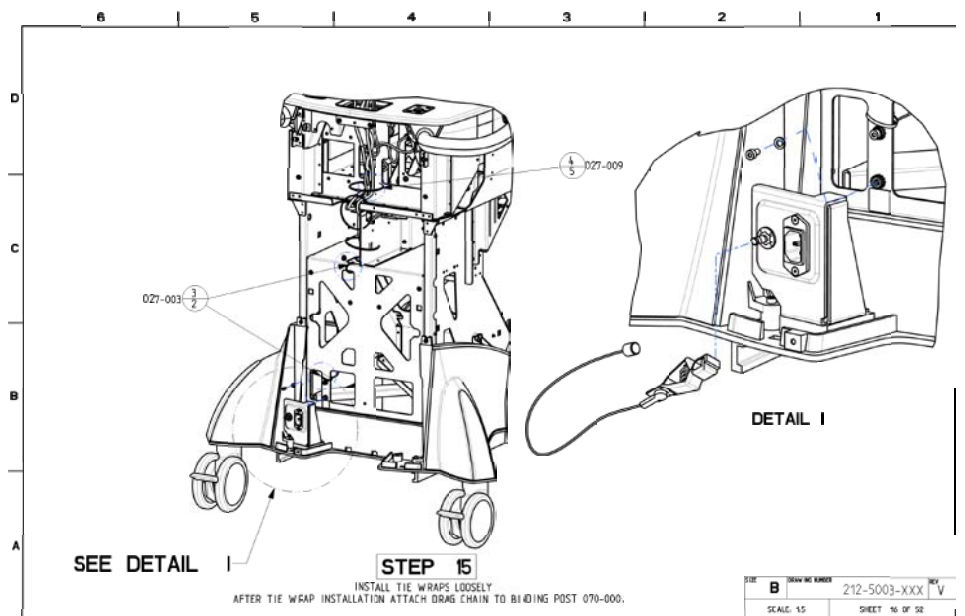
STEP 3

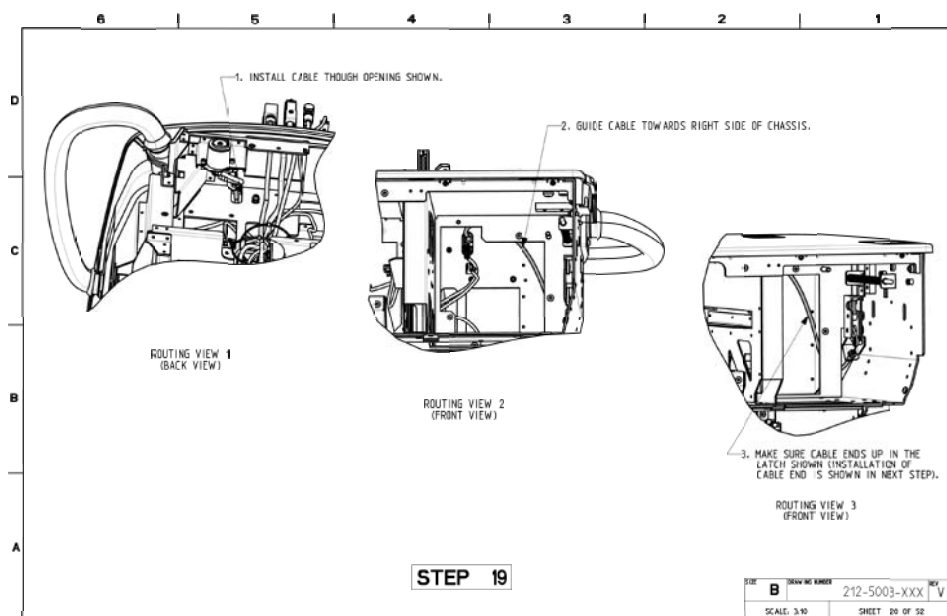
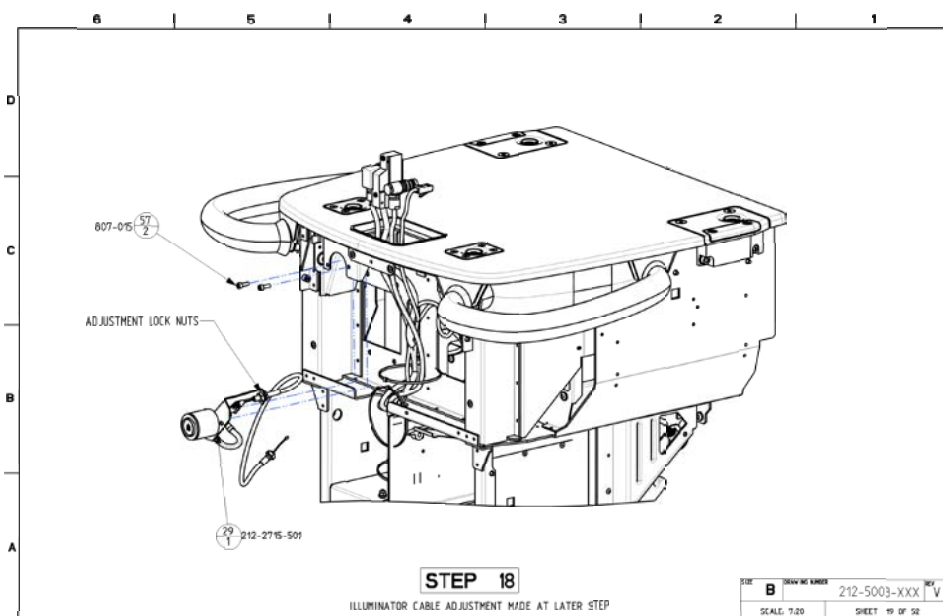
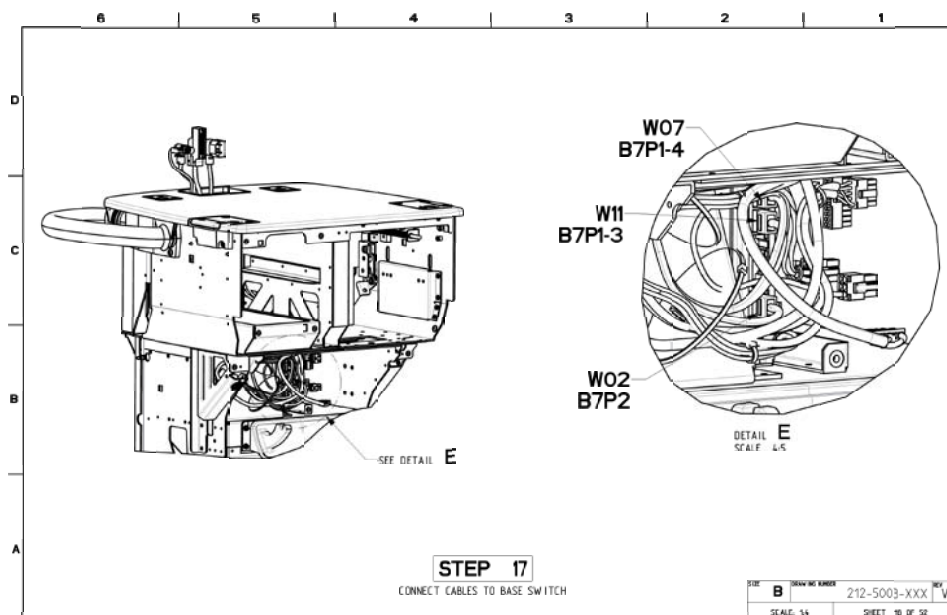
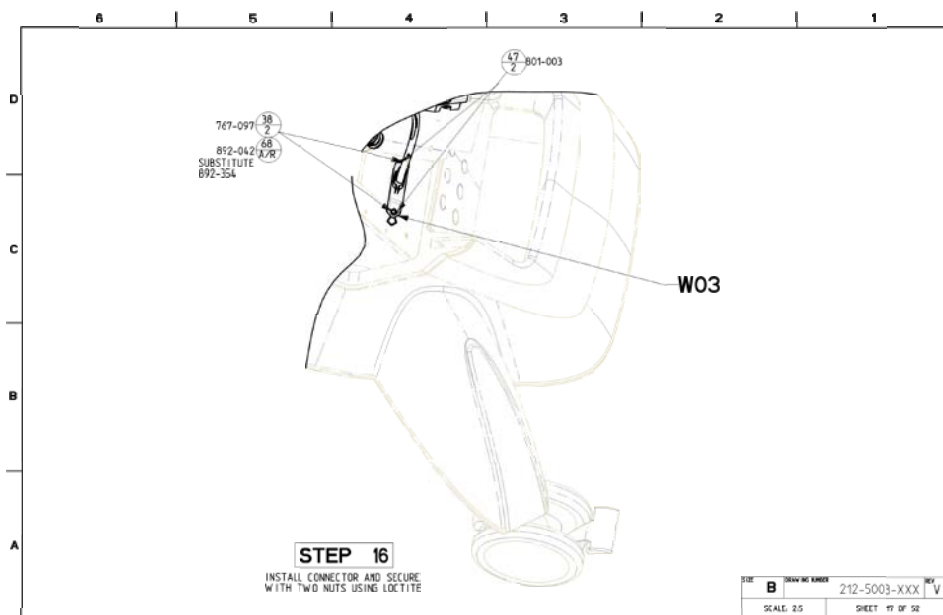
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B	212-5003-XXX	V

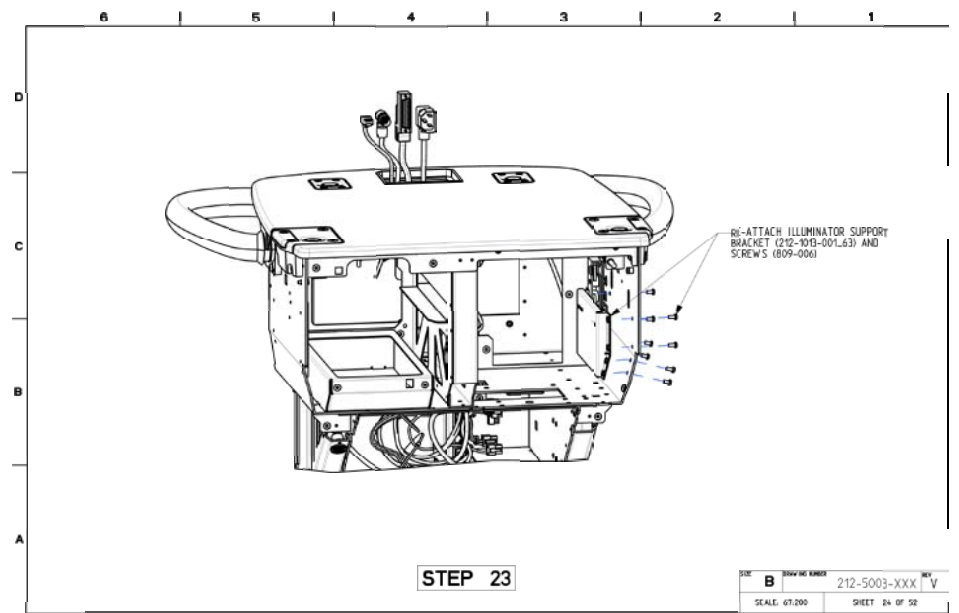
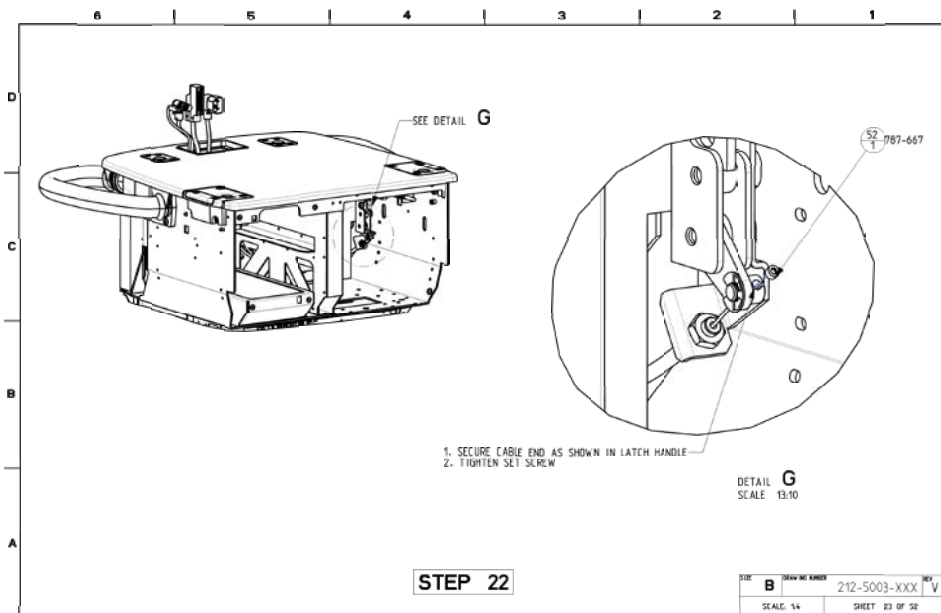
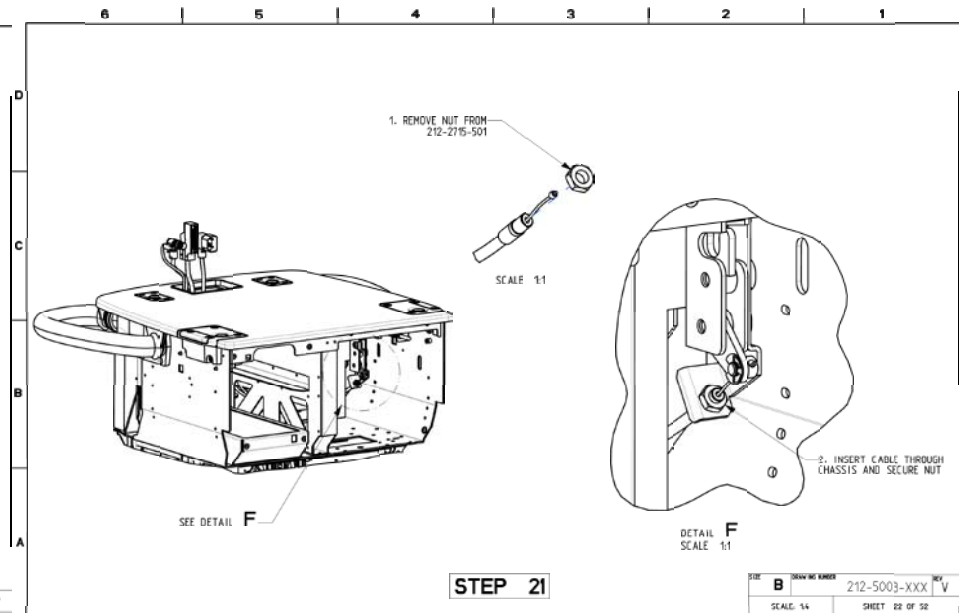
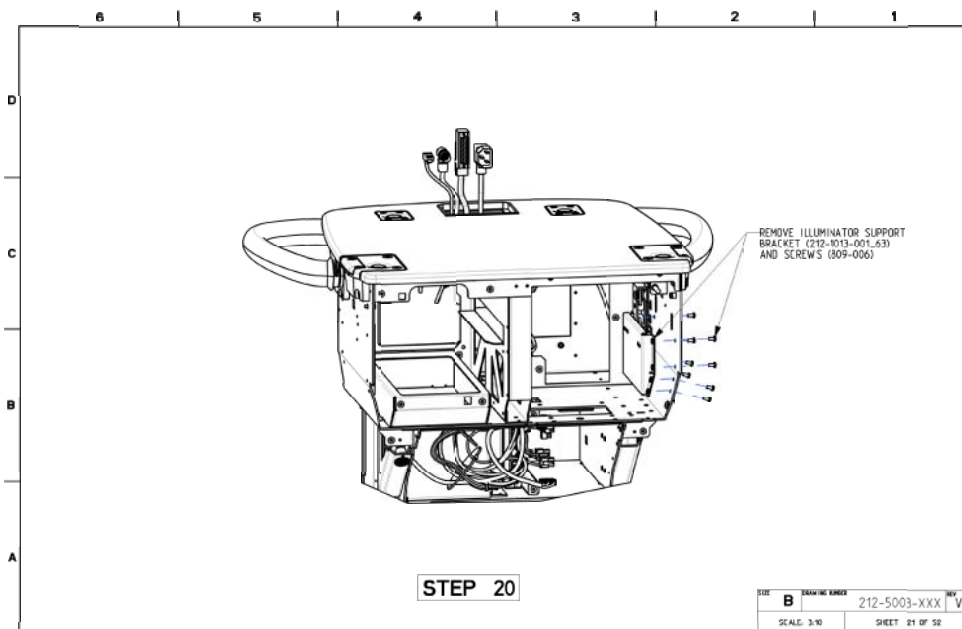
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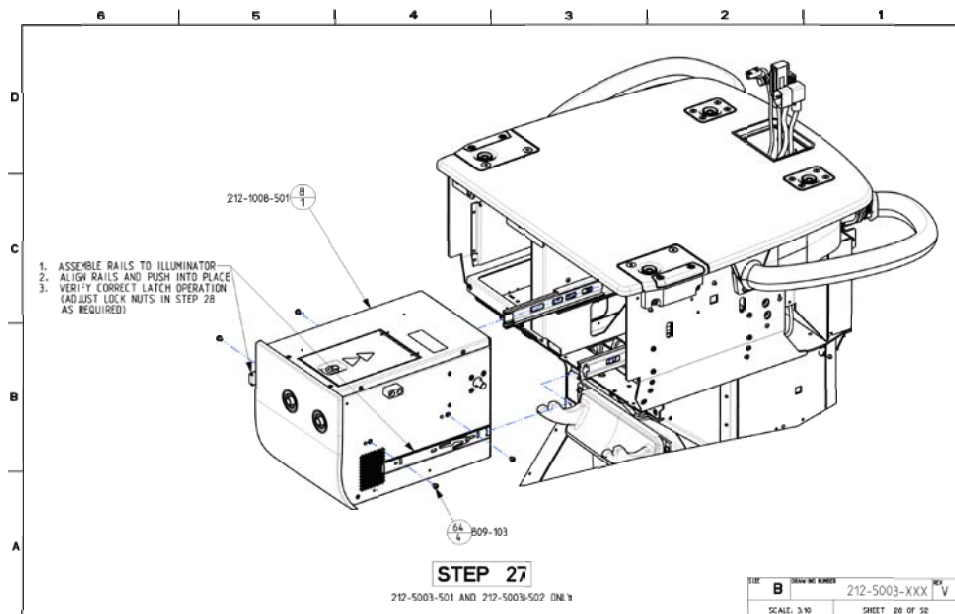
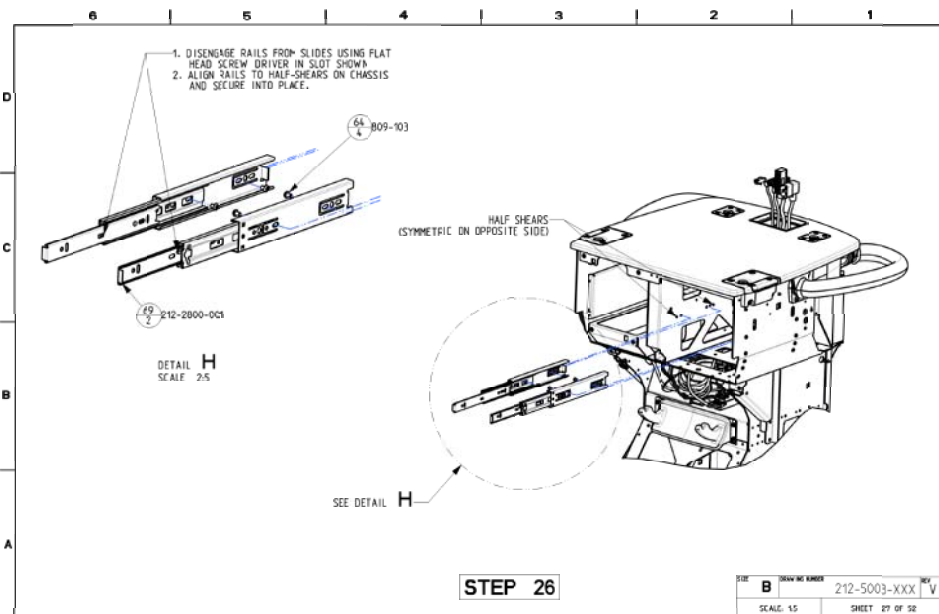
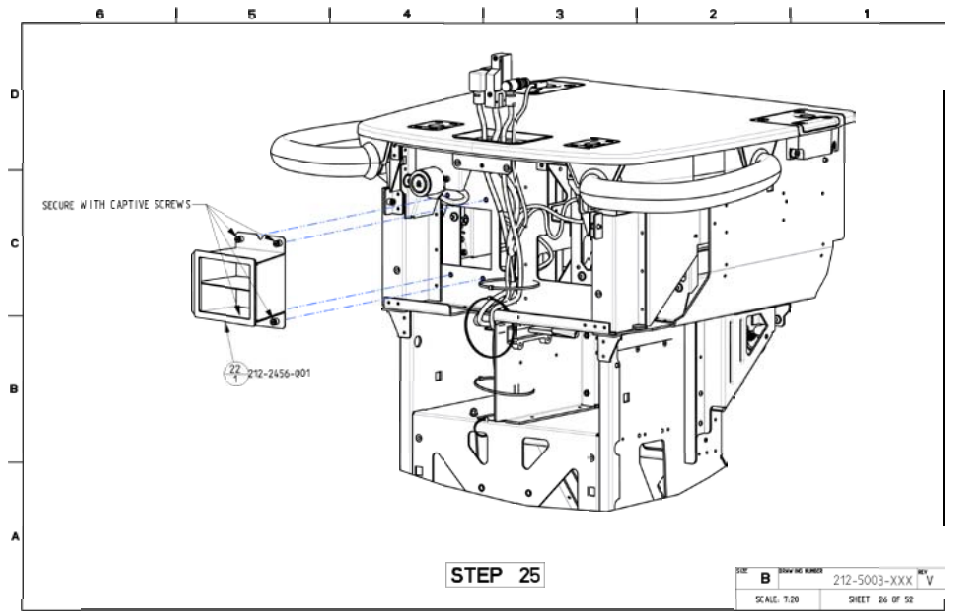
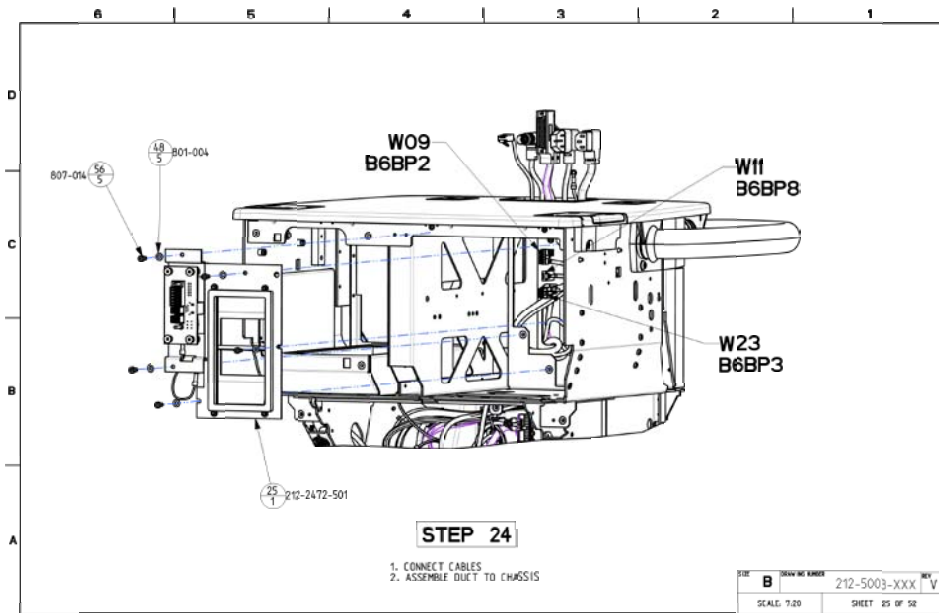


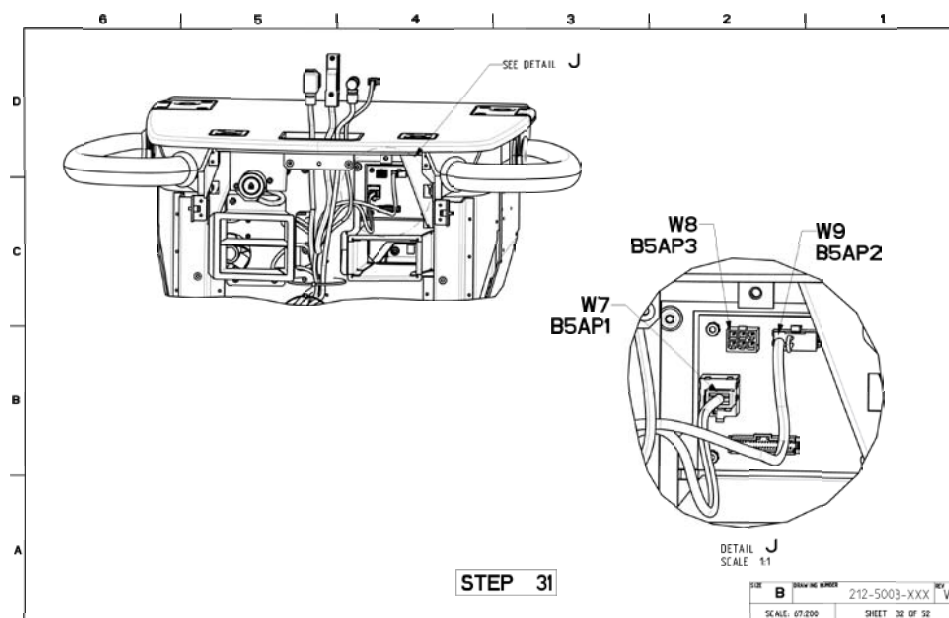
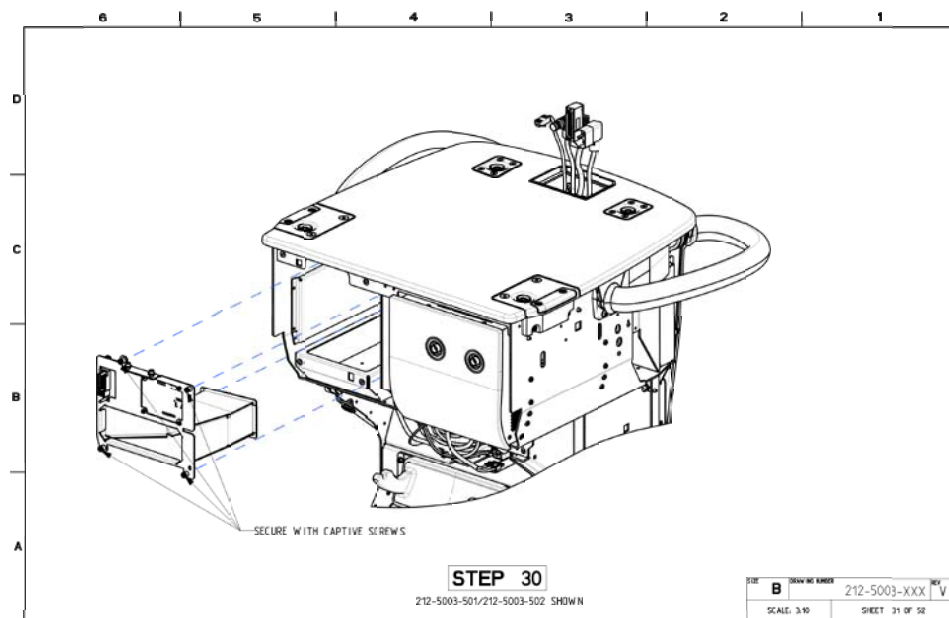
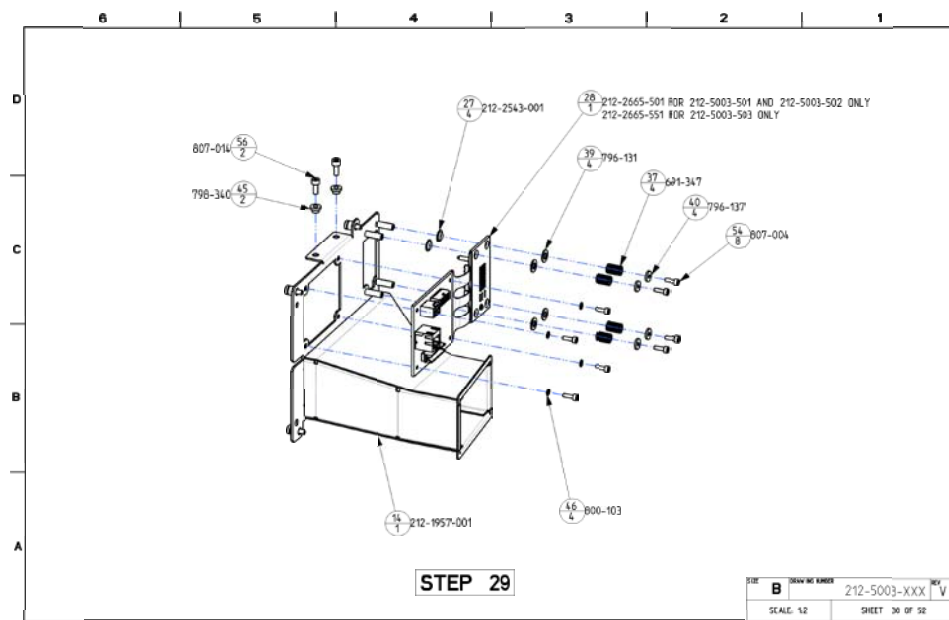
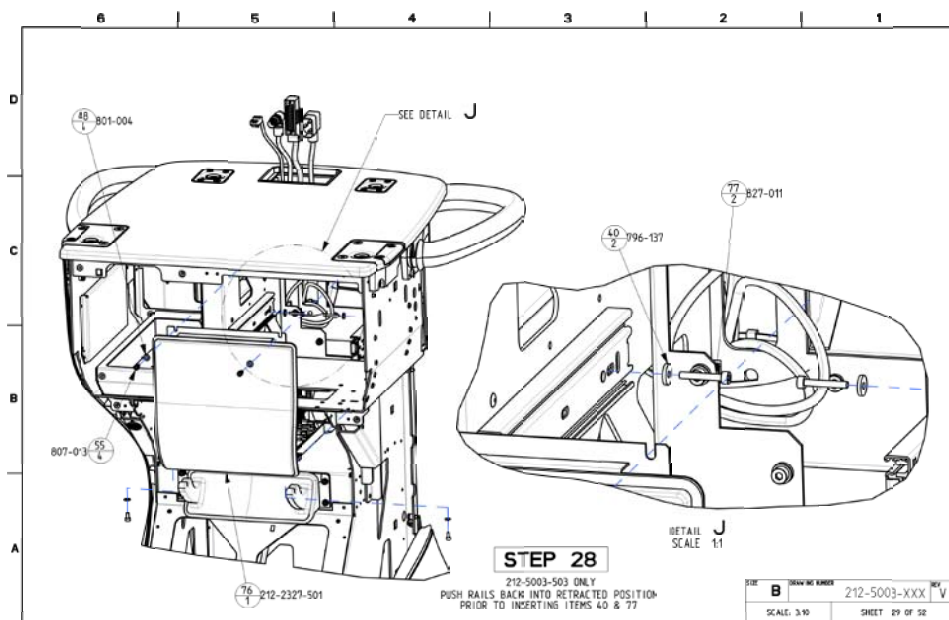


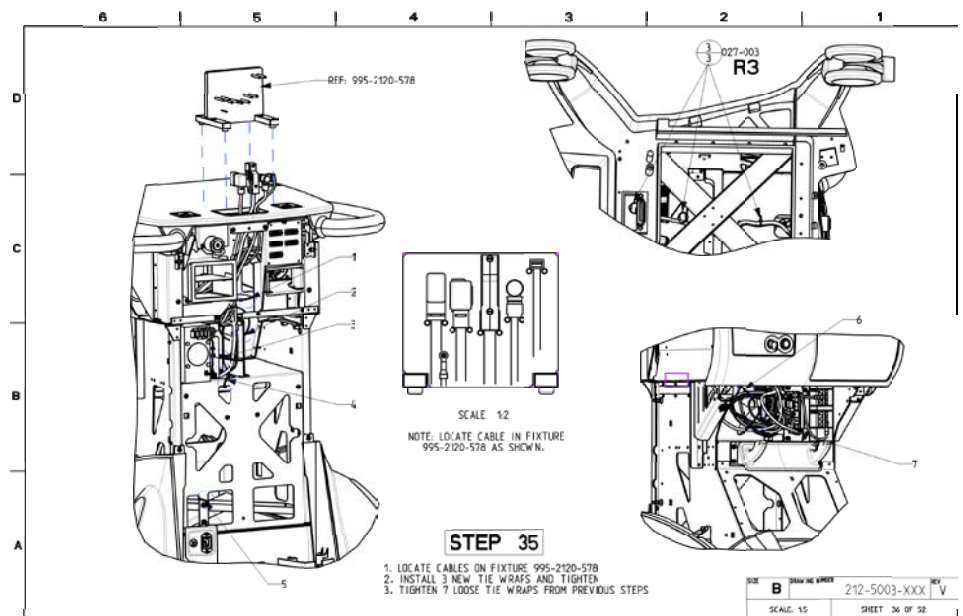
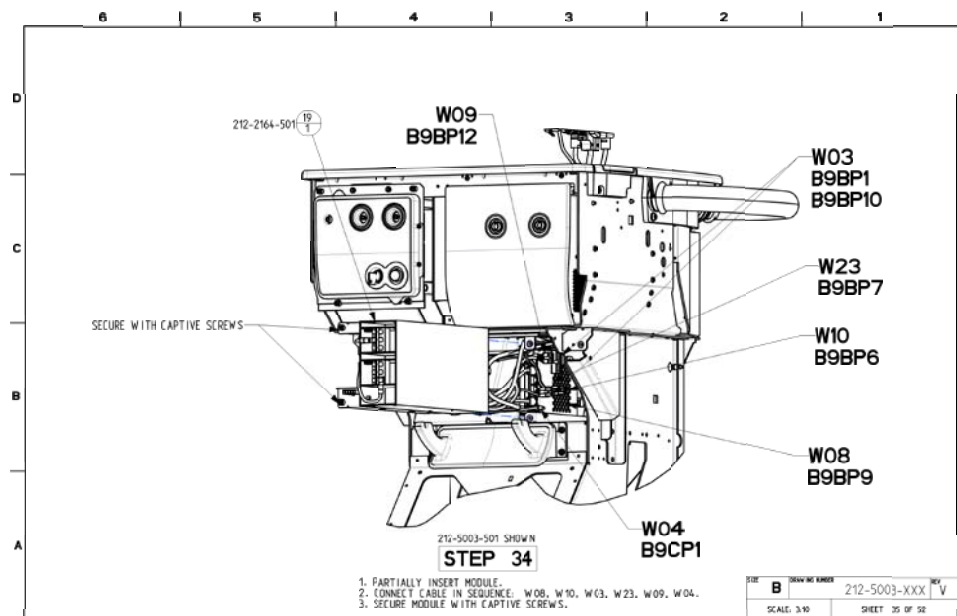
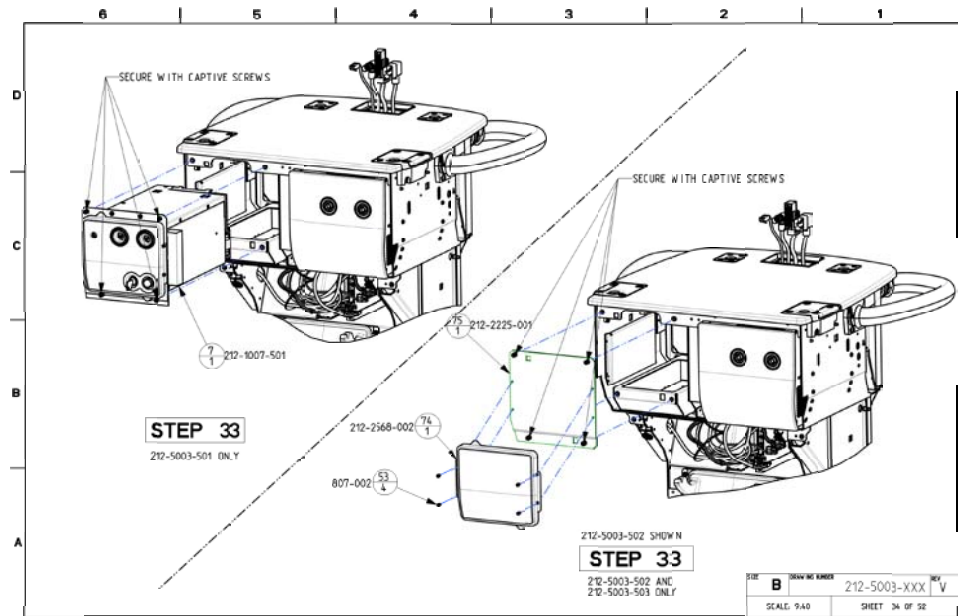
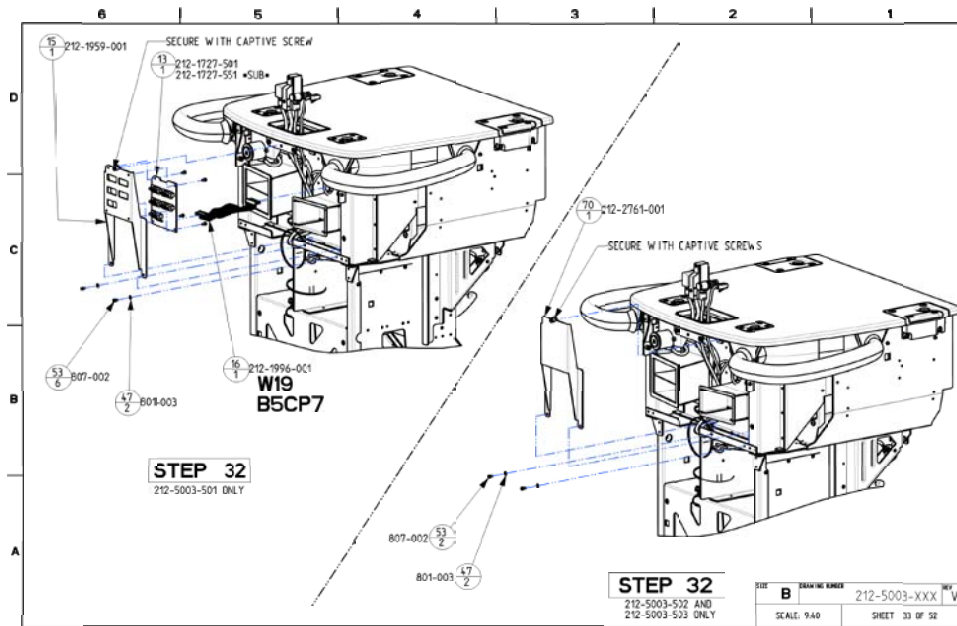


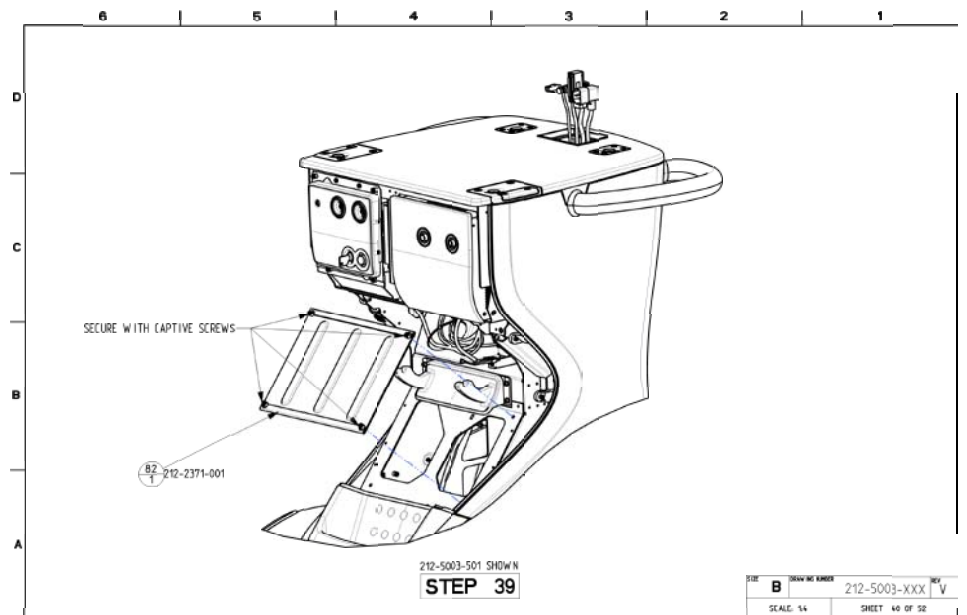
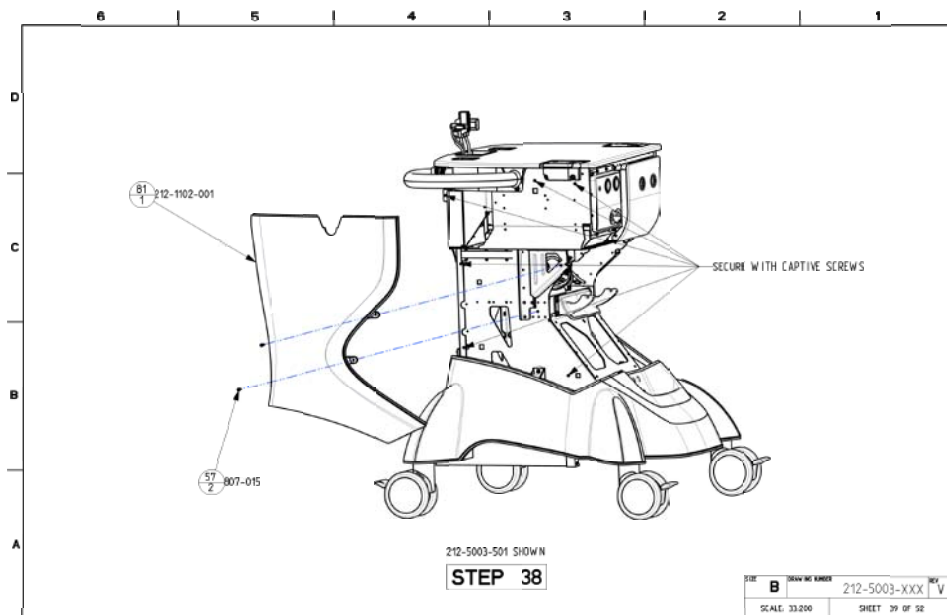
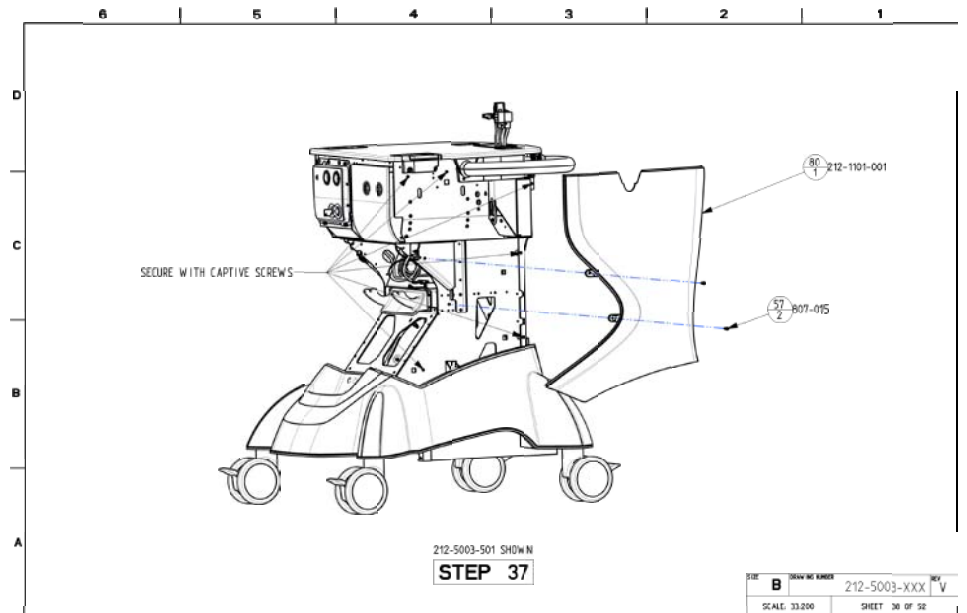
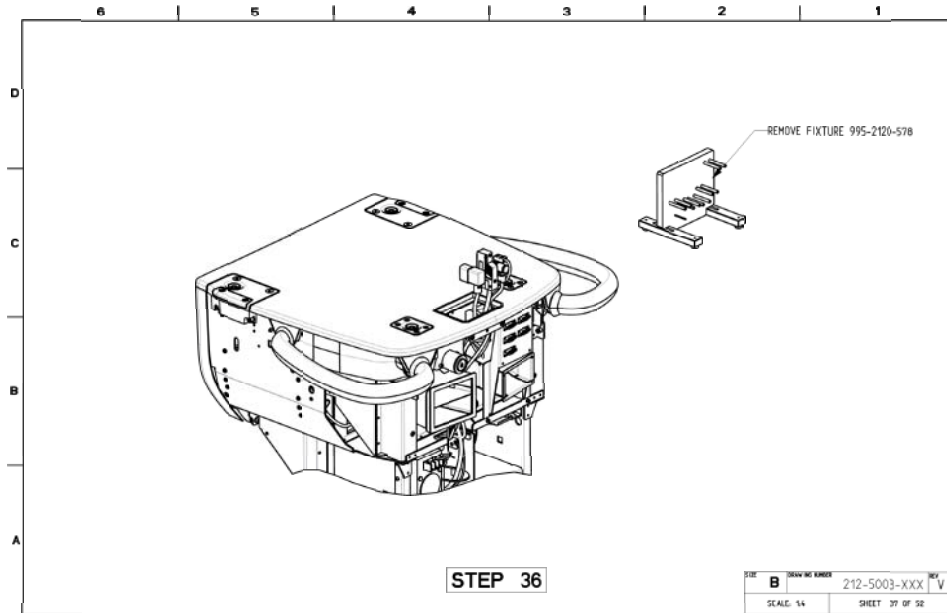


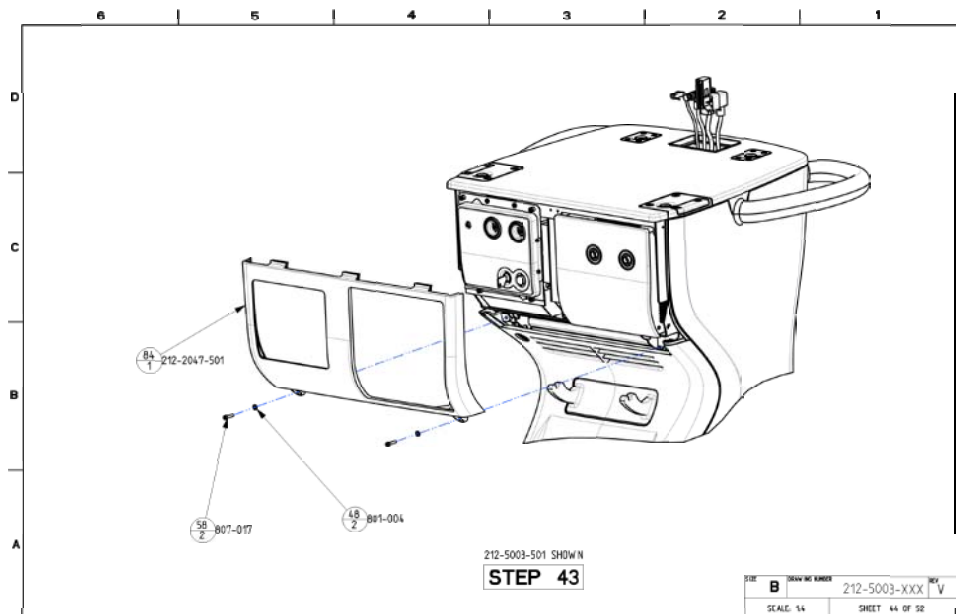
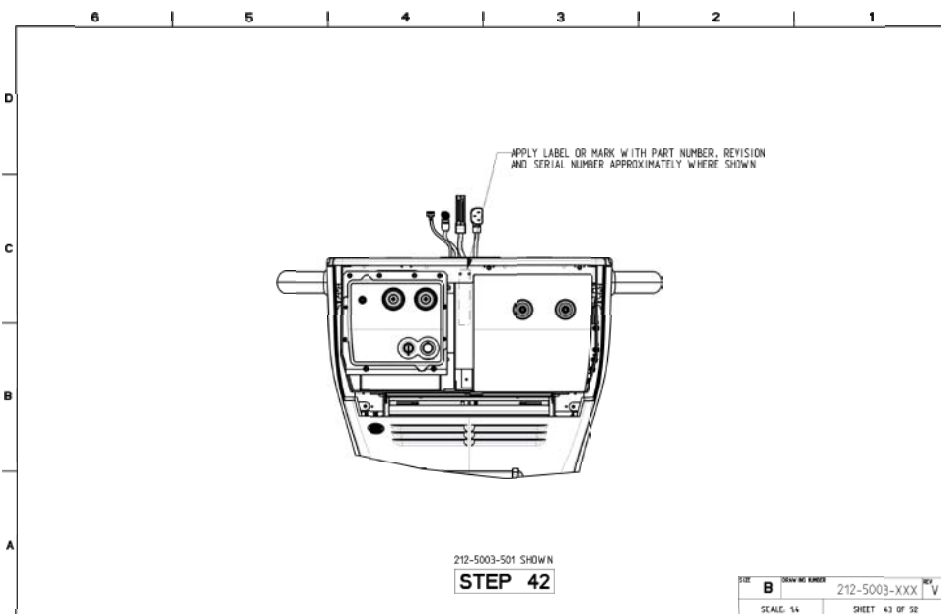
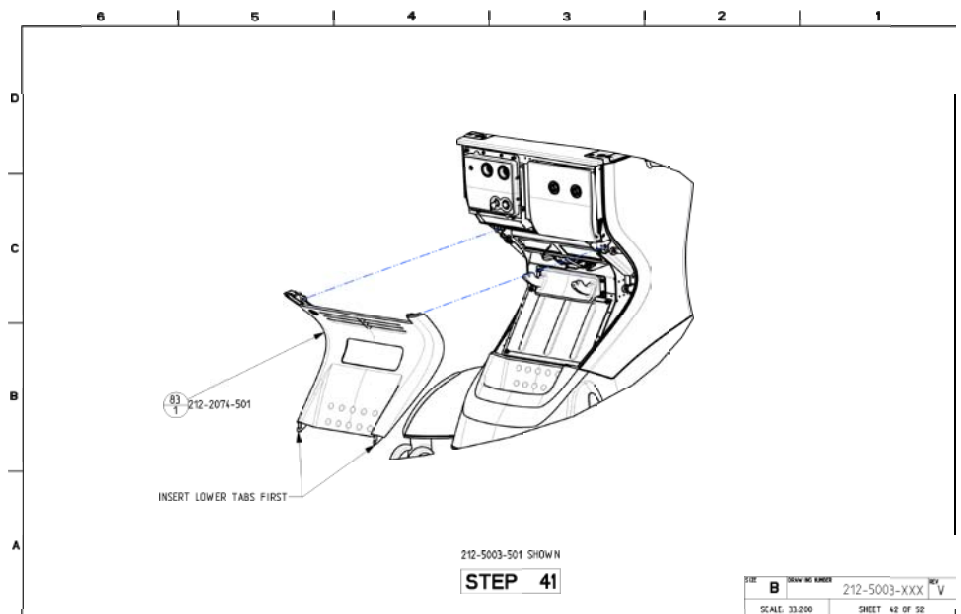
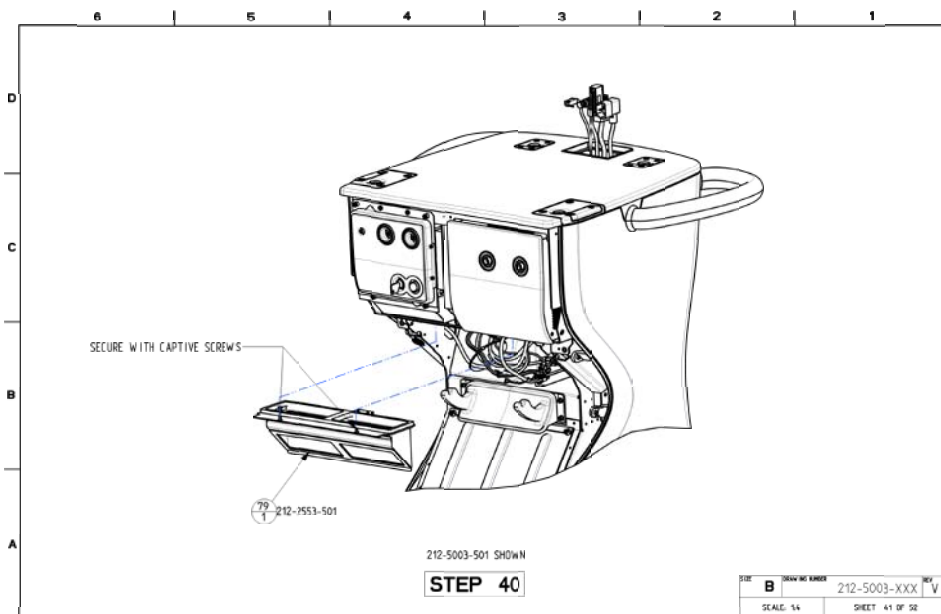


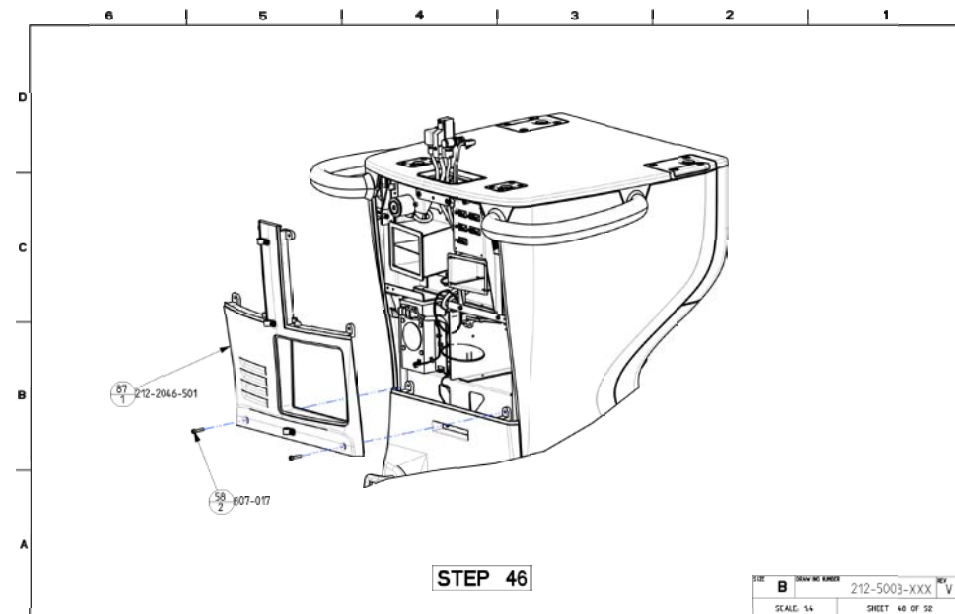
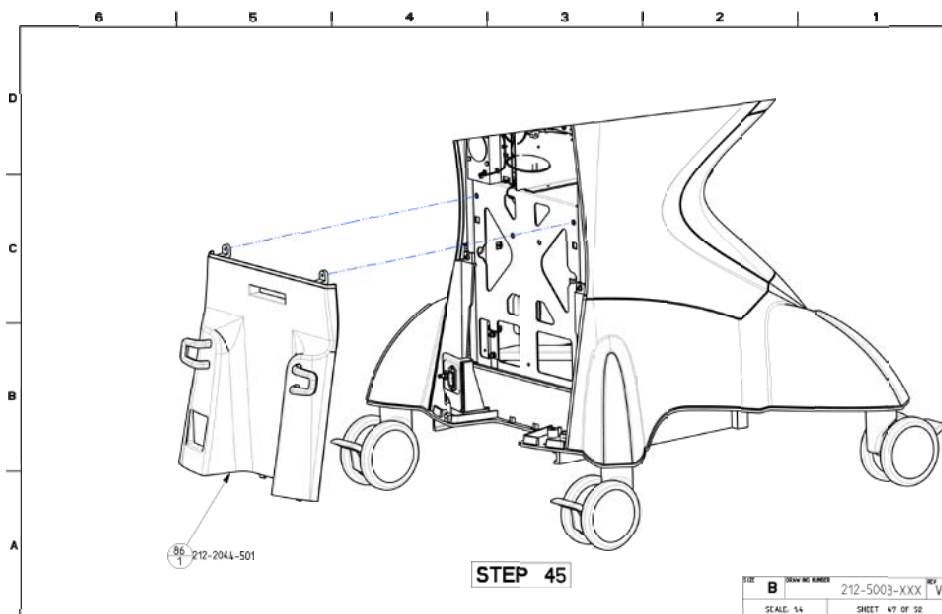
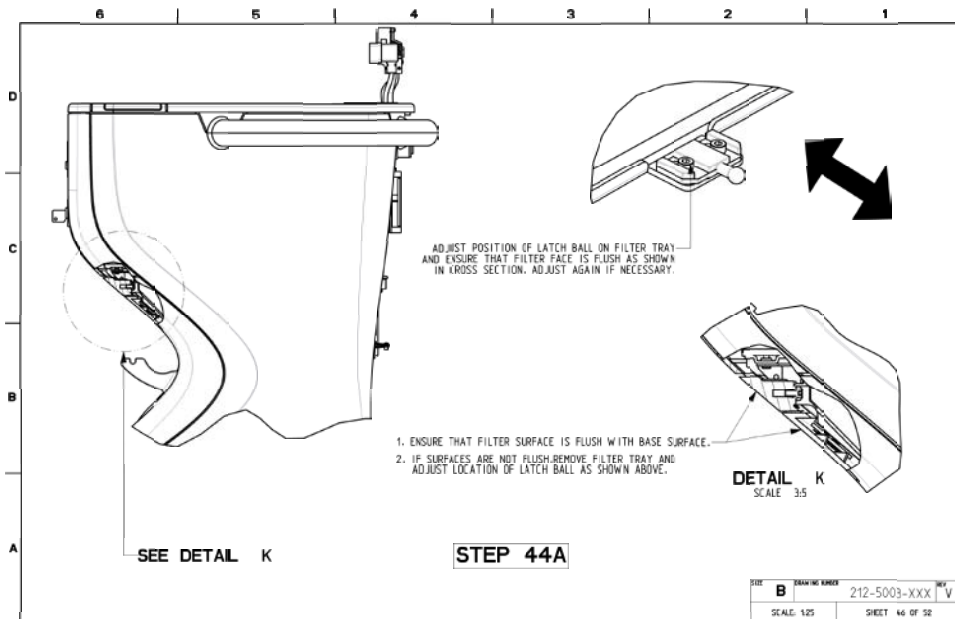
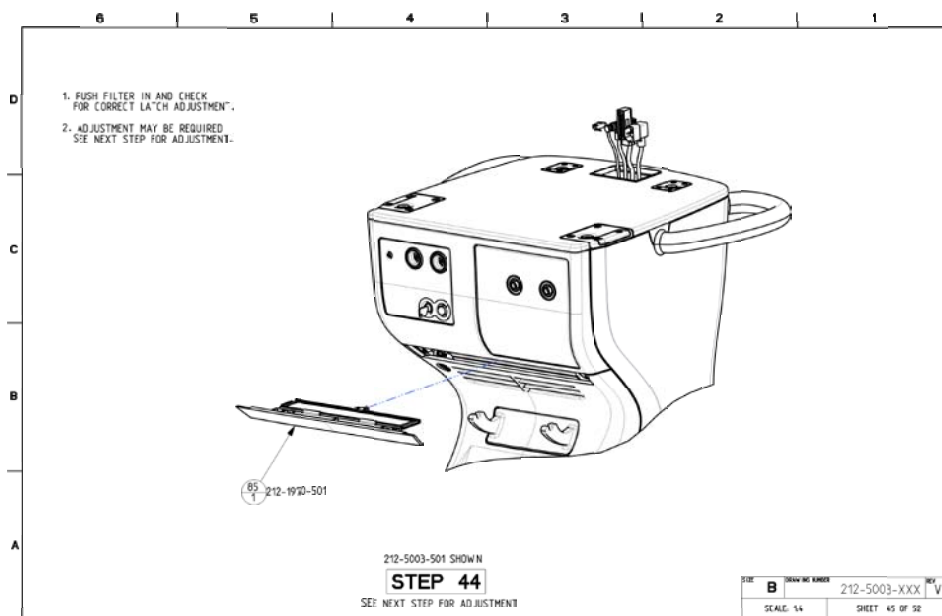


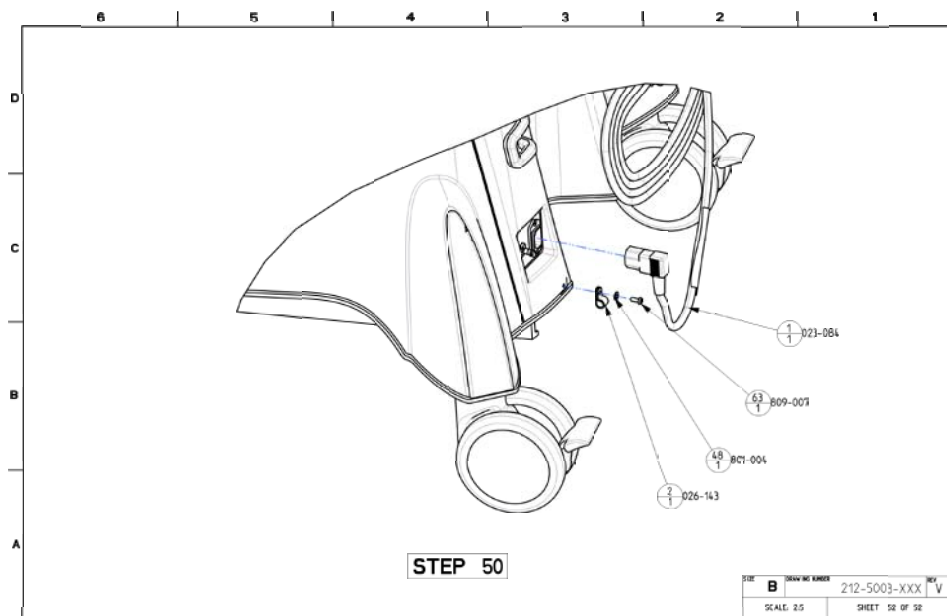
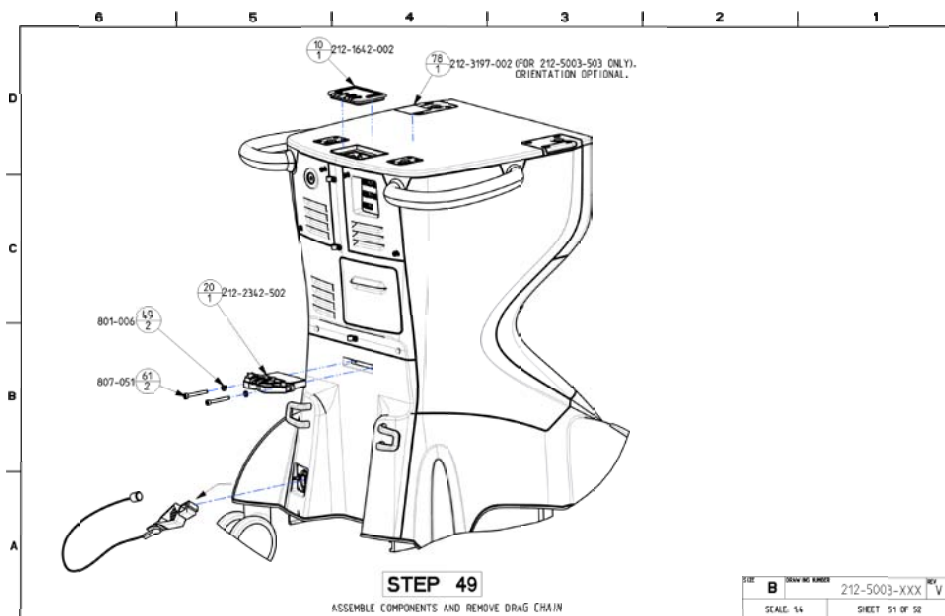
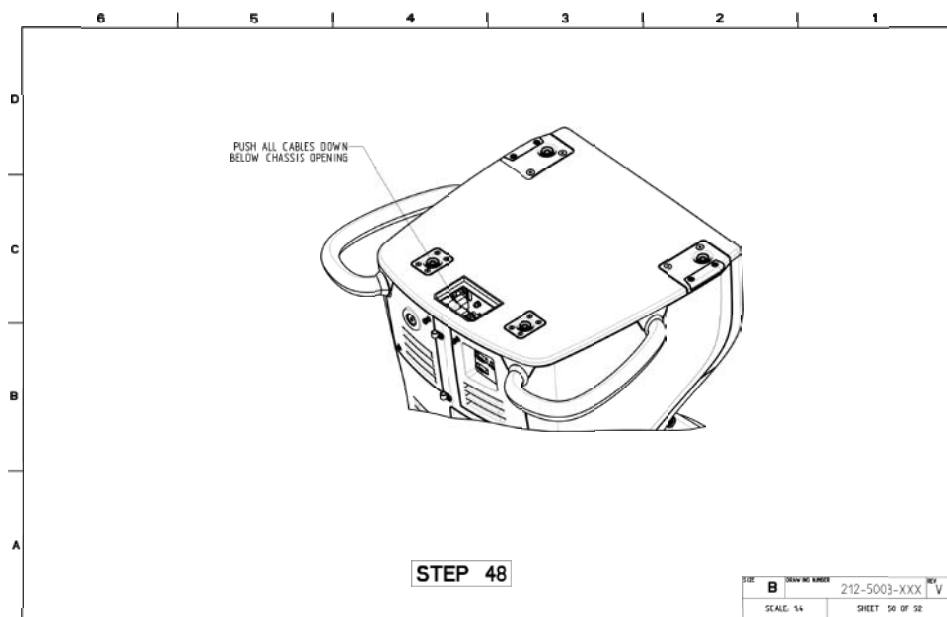
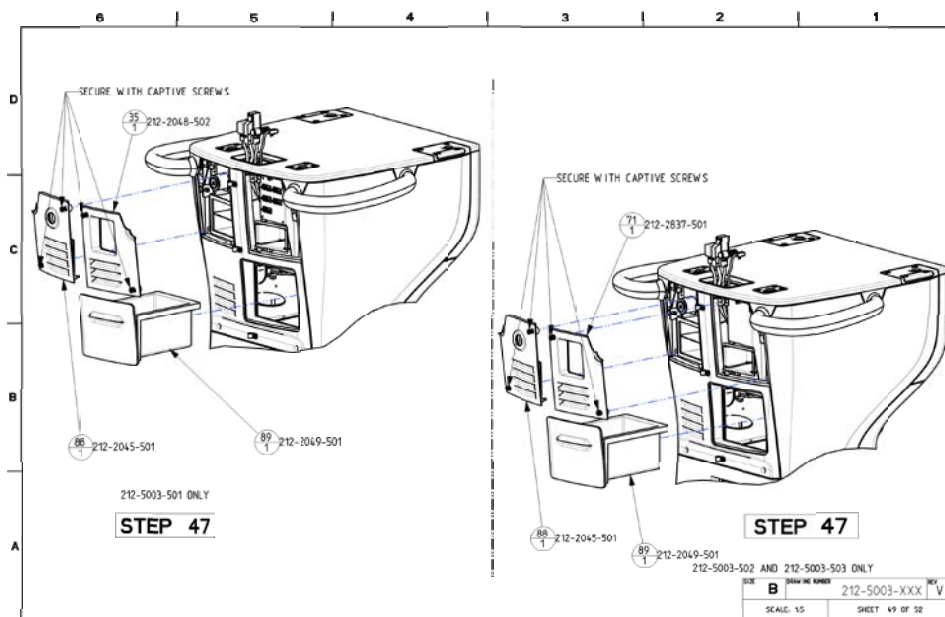










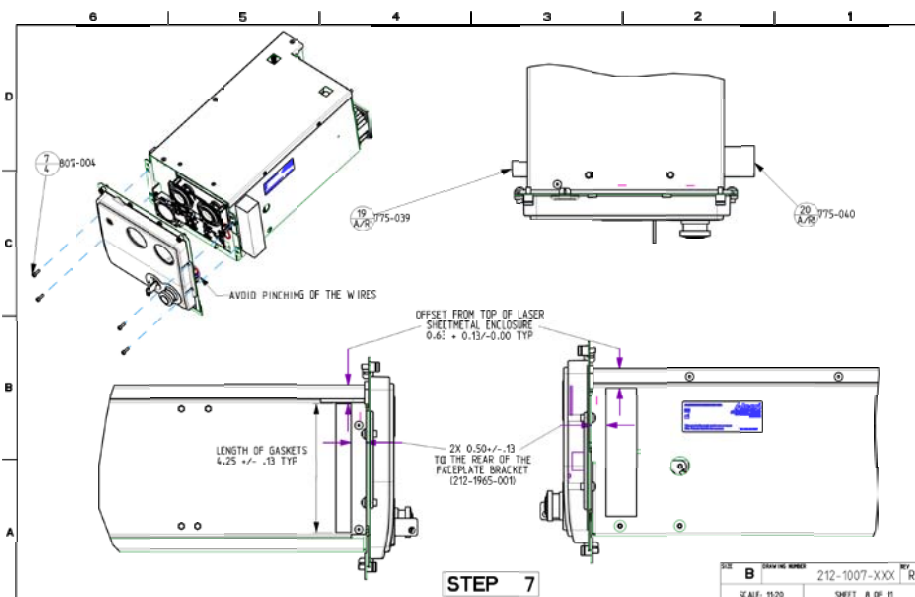
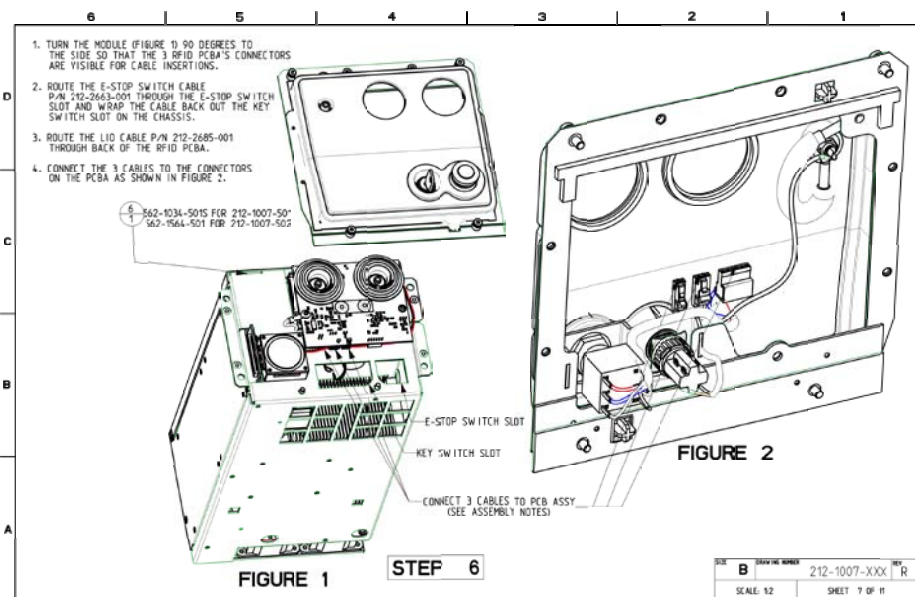
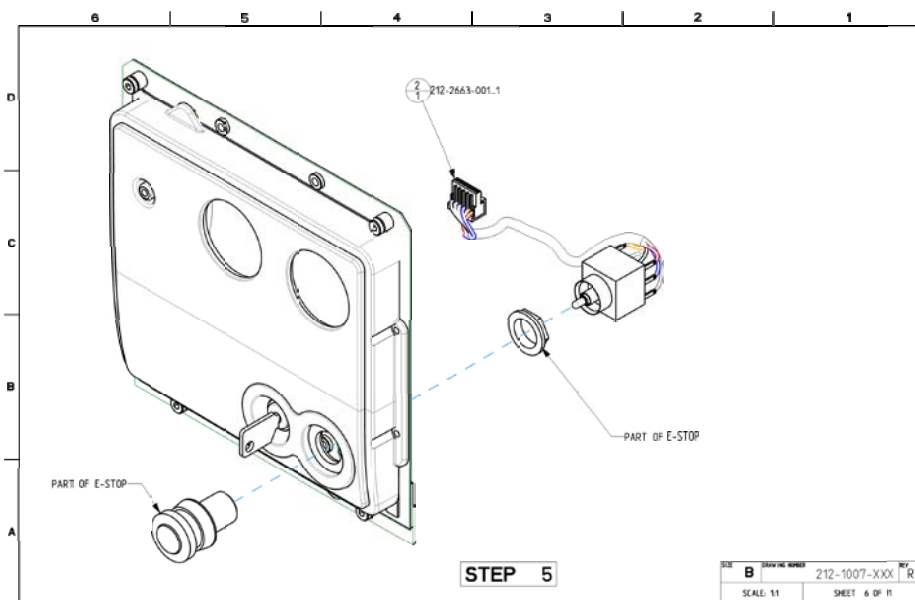
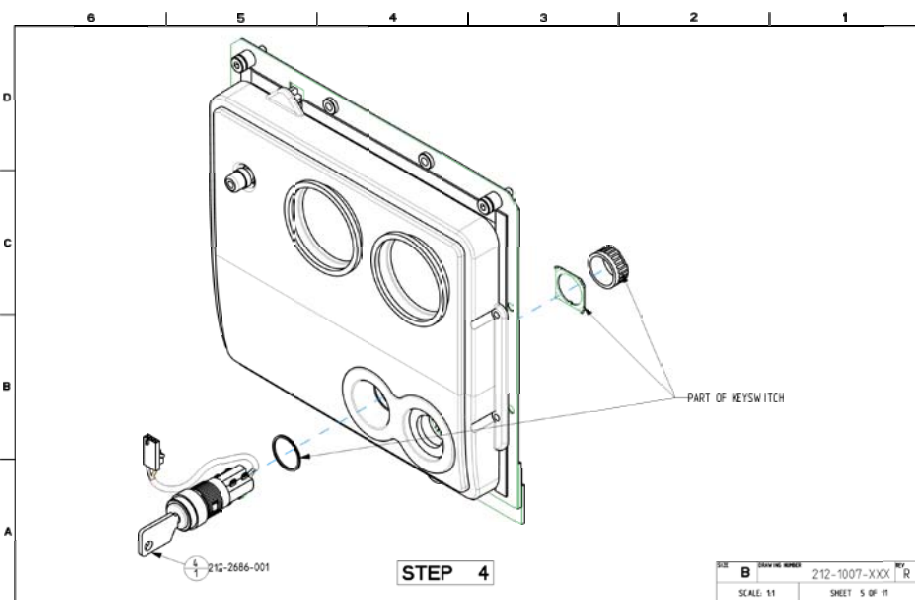


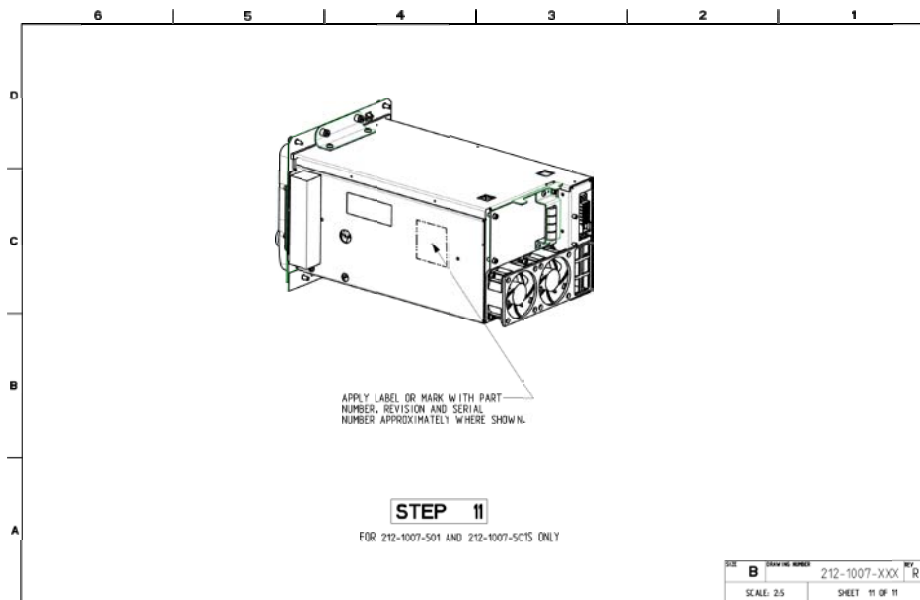
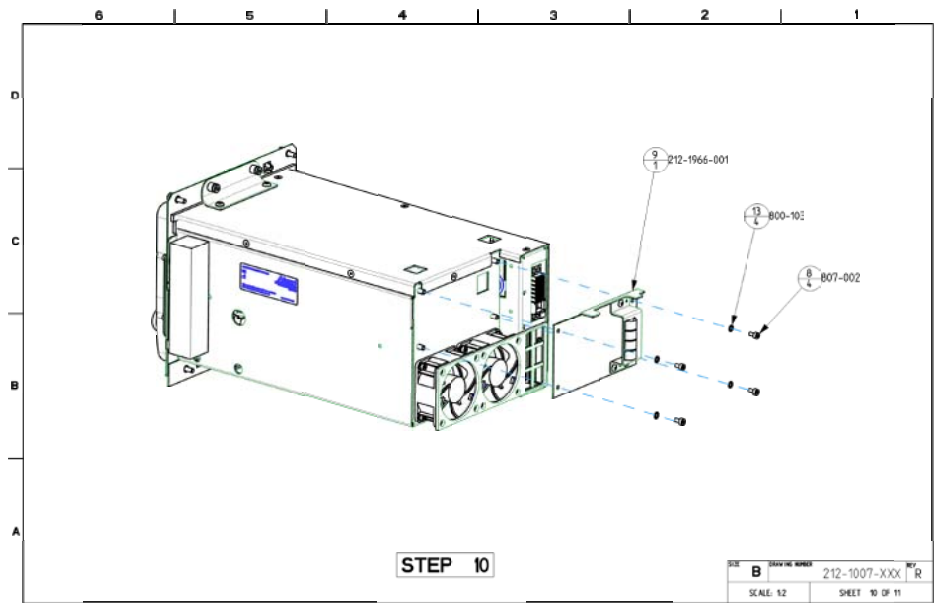
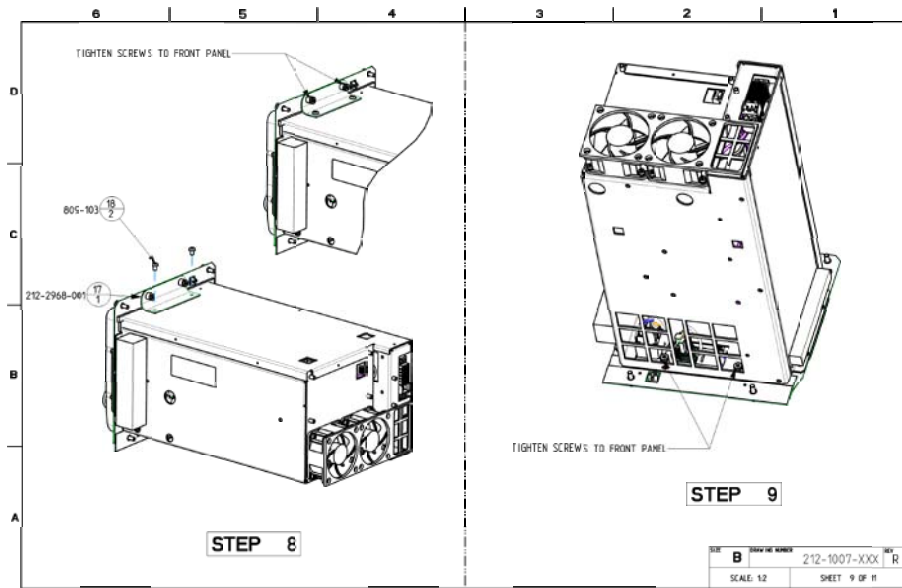
212-1007-501 ASSY, LASER

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-3615-001	HOUSING,U/S MODULE,IOL	1
002	212-3565-551	ASSY,PCB,US DIATH AUTOSERT IOL	1
003	807-004	SCREW,CAP HD SKT,M3X10 SST	7
004	212-3568-001	FACEPLATE,U/S DIATHERMY,IOL	1
005	212-1855-551	ASSY,PCB,RING ILLUMINATION	1
006	807-147	SCREW,CAP HD SKT,M2.5X5 SST	6
007	212-3567-001	ASSY,CABLE RECEPTACLE,IOL INJ	1
008	212-2271-001	ASSY,CABLE,U/S W35	1
009	212-2271-002	ASSY,CABLE,U/S W40	1
010	063-022	JACK,BANANA,4MM GOLD PLATED	2
011	212-2273-001	CABLE ASSY,W42	1
012	212-2269-001	CABLE ASSY,U/S RING ILLUM,W31	1
013	807-002	SCREW,CAP HD SKT,M3X6 SST	4
014	212-1382-001	COVER,MODULE,U/S DIAT AQUA	1
015	811-001	SCREW,FLAT HD SKT,M3X6 SST	6
016	027-003	CABLE TIE,.625X3.50L,NYLON	2
017	766-003	STANDOFF,HEX,6-32X.31 M/F NYL	1
018	769-072	NUT,HEX,6-32 NYLON	1
019	798-017	WASHER,FLAT,NO.6 .062 THK NYL	1
020	797-116	WASHER,LOCK,INT.79X.98X.05 BRZ	1

212-1007-502 ASSY, LASER

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2521-502	ASSY,FACEPLATE,LASER CART IEC	1
002	212-2685-001	CABLE ASSY,LIO	1
003	212-1965-002	BRACKET,MOUNT,FRONT LONG PEM	1
004	212-2686-001	CABLE ASSY,KEYSWITCH	1
005	212-2663-001	CABLE ASSY,E-STOP,LASER	1
006	562-1564-501	ASSY,MODULE,CORE	1
007	807-004	SCREW,CAP HD SKT,M3X10 SST	4
008	807-002	SCREW,CAP HD SKT,M3X6 SST	4
009	212-1966-001	BRACKET,GUIDE,INTERFACE NGL	1
013	800-103	WASHER,EXT LOCK,M3 SST	5
014	803-003	NUT,HEX,M3X.5 SST	2
015	800-003	WASHER,SPLITLOCK,M3 SST	2
016	212-2955-001	CABLE ASSY,GROUND STRAP,LIO	1
017	212-2968-001	BRACKET,LASER, TOP MFG	1
018	809-103	SCREW,BTN HD SKT,M4X6 SST	1
019	775-039	GASKET,EMI SQ.,500X.500	2
020	775-040	GASKET,EMI SQ,1.00X1.00	1





562-1034-501 ASSY, CORE MODULE

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	562-1365-501X	ASSY,LASER CONTROL,COMPLETE	1
002	562-1041-501	ASSY,ENGINE,LASER	1
003	562-1068-501	ASSY,PCB,POWER DRIVER	1
004	022-179	CABLE,FLAT,20P DBL END 3IN	2
005	022-174	CABLE,FLAT,F-F 50P .050 6IN	1
007	562-1475-001	GASKET,REAR,PCB EXIT	1
008	562-1251-001	PANEL ASSY,INSERT,FRONT PTD	2
009	562-1275-001	GASKET,CHASSIS,LASER	1
010	562-1399-501	ASSY,CHASSIS	1
011	562-1308-001	LID ASSY,CHASSIS	1
012	562-1309-001	SIDE ASSY,CHASSIS	1
013	562-1448-001	GASKET,DIVIDER,AIRFLOW	1
020	811-001	SCREW,FLAT HD SKT,M3X6 SST	10
025	562-1402-001	LABEL,SERIAL NO,ENG ID	1
026	562-1506-501	ASSY,CABLE,POWER ENGINE POS	1
027	562-1506-502	ASSY,CABLE,POWER ENGINE NEG	1
028	023-112	CABLE,ETHERNET BOOTLESS,1 FT	1
029	562-1382-001	LABEL,PCB REMOVED,RADIATION	1
030	809-001	SCREW,BTN HD SKT,M3X6 SST	7
032	022-185	CABLE,FLAT,20P DBL END 4IN	1
033	562-1516-SSC	KIT,SSC,MECH WEST	1
034	562-1512-SSC	KIT,SSC,CABLES 2	1
035	562-1518-SSC	KIT,SSC,SHEET-METAL NGL	1
036	562-1511-SSC	KIT,SSC,CABLES 1	1

NOTES: UNLESS OTHERWISE SPECIFIED.

- INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
- BALLOON SHOWS ITEM NUMBER (C) ON TOP AND QUANTITY (Y) ON BOTTOM.
- UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
- LABELING VERIFICATION
 - CLEAR WORK AREA OF ANY PREVIOUS LABELING OPERATIONS.
 - VERIFY THAT ALL LABELS HAVE BEEN RECEIVED.
 - VERIFY P/N AND REV. LETTER AGAINST AS400 P/N AND REV. LETTER.
 - VERIFY LABEL INSTALLATION PER MAP 562-1034-XXX.
 - DATE AND STAMP TABLE 2 AFTER COMPLETION.
- LASER SAFETY GLASSES SHALL BE WORN FOR THE WAY LENGTH OF 532nm WITH A MIN OD > 3.7 AND AN OD > 0.76 FOR 635nm.
- ESD PRECAUTIONS SHALL BE TAKEN WHILE HANDLING ESD SENSITIVE COMPONENTS.
- 501S IS MADE FROM ONE -501.
- MTP 901-5620-001 CAN BE USED IN PLACE OF MTP 901-5620-025.

REVISION HISTORY

REV	EEN	DATE
W	20083077	2/17/08
X	20083123	01/02/09
Y	20090050	01/14/09
AA	20090204	02/05/09
AB	20090779	05/11/09
AC	20090836	05/29/09
AD	20091372	08/11/09
AE	20091483	08/20/09
AF	20091827	10/06/09
AG	20092144	11/23/09
AH	20101147	01/28/10
AJ	20101616	09/27/10
AK	20101788	10/19/10
AL	20101862	10/28/10
AM	20101863	12/09/11
AN	CN017043ECN	05/10/11
AR	CN020414ECN	07/29/11
AT	CN027073ECN	11/30/12
AU	CN028618ECN	15/01/12
AV	CN031218ECN	06/07/12
AW	CN030990ECN	02/26/13

TABULATION BLOCK

PART NUMBER	REV	DESCRIPTION	PART NUMBER	DESCRIPTION	PART NUMBER	DESCRIPTION
562-1034-501	AW	ASSY,MODULE,CORE	562-1034-501S	ASSY,MODULE,CORE SERV CE	562-1034-501FS	ASSY,MODULE,CORE SERVICE

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	562-1034-501	ASSY,MODULE,CORE	ALCON	1

SEE SEPARATE PARTS LIST

DATE: 06/29/06
BY: K. GARLAND
CHECKED: J. MUELLER
APPROVED: L. JORDANA
PRINT REVISION: 2/23/2007

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF ALCON.

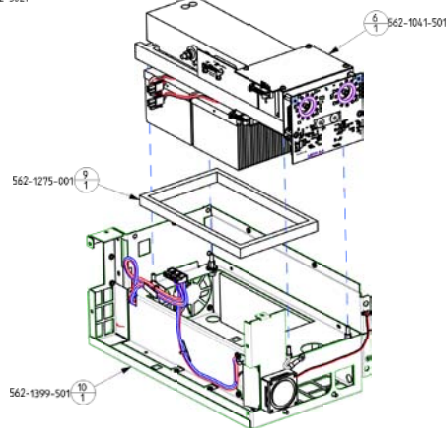
Alcon
VISTA, CALIFORNIA 92083

DESCRIPTION: ASSY,MODULE,CORE
SIZE: B
SCALE: 7:20
SHEET: 1 OF 16
VERSION: AW-1

NOTE: Pages 2 through 6 of 562-1034-XXX are data sheets for assembly documentation and are not included in this manual.

STEP #1

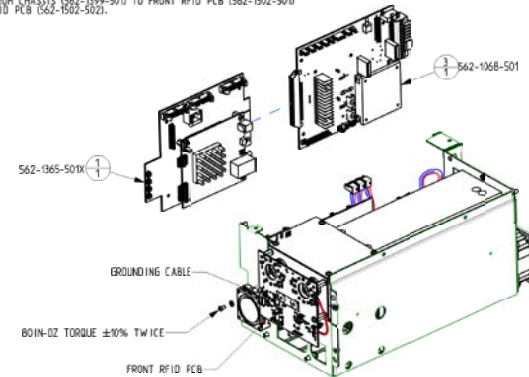
1. PLACE LASER CHASSIS GASKET (562-1275-001) AROUND HEAT SINKS.
2. SET LASER ONTO (4) "BREADED" SPACERS IN CHASSIS (562-1399-501). ALTERNATELY TURN EACH SET OF MOUNTING HARDWARE A FEW THREADS AT A TIME FROM BOTTOM UNTIL TIGHT.
3. PLUG IN LASER FIRING TONE SPEAKER WIRE TO J8 ON 562-1502-502.



SCALE: 2:5 SHEET 7 OF 6

STEP #2

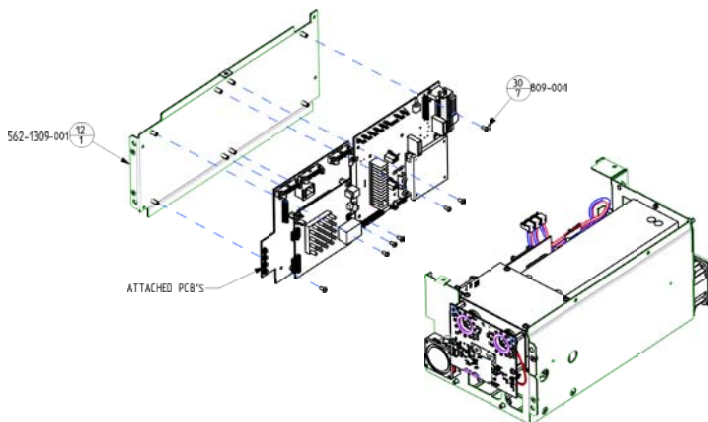
1. PLUG COMPLETE LASER CONTROL PCB (562-1365-501) INTO POWER DRIVER PCB (562-1068-501) AS SHOWN.
2. ATTACH GROUNDING CABLE (562-1454-501) FROM CHASSIS (562-1399-501) TO FRONT RFID PCB (562-1502-502) USING EXISTING HARDWARE FROM FRONT RFID PCB (562-1502-502).



SCALE: 2:5 SHEET 8 OF 6

STEP #3

1. FASTEN ATTACHED PCB'S (562-1365-501 & 562-1068-501) TO CHASSIS SIDE PANEL (562-1309-001) WITH HARDWARE AS SHOWN.



SCALE: 2:5 SHEET 9 OF 6

STEP #4

1. CONNECT LASER DIODE CABLES WITH SUPPLIED HARDWARE FROM LASER ENGINE:

- A) 562-1286-501 (RED) TO POSITIVE (+) TERMINAL ON LASER ENGINE.
- B) 562-1286-502 (BLACK) TO NEGATIVE (-) TERMINAL ON LASER ENGINE.

2. CONNECT (1) FLAT CABLE (022-179) TO EACH:

- A) MID EXT JUN OPT SENSOR PCB (562-1219-501).
- B) BOTTOM LASER SENSOR PCB (562-1075-501).
- C) TOP LASER SENSOR PCB (562-1070-501).

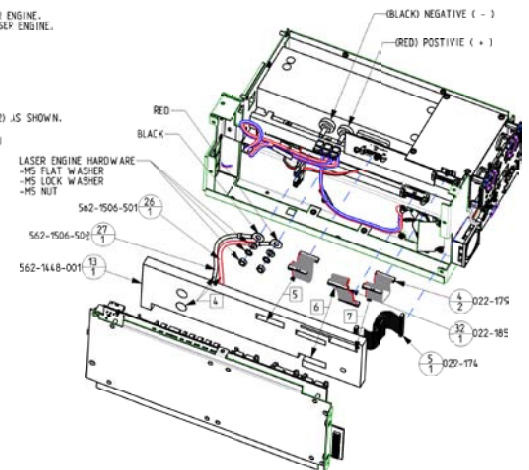
3. CONNECT FLAT CABLE (022-174) TO FRONT RFID PCB 562-1502-502 AS SHOWN.

4. ROUTE CABLE 562-1546-501 (RED) AND 562-1506-502 (BLACK) THRU THE AIRFLOW GASKET DIVIDER (562-1448-001) AS INDICATED.

5. ROUTE 20P FLAT CABLE 022-179 THRU THE AIRFLOW GASKET DIVIDER (562-1448-001) AS INDICATED.

6. ROUTE 20P FLAT CABLE 022-185 THRU THE AIRFLOW GASKET DIVIDER (562-1448-001) AS INDICATED.

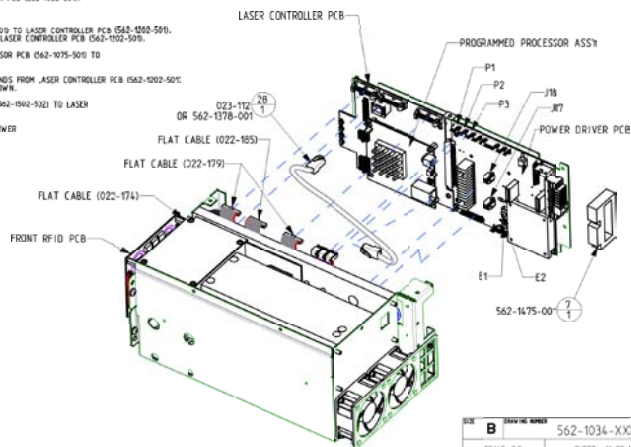
7. ROUTE 20P FLAT CABLE 022-179 THRU THE AIRFLOW GASKET DIVIDER (562-1448-001) AS INDICATED.



SCALE: 2:5 SHEET 10 OF 16

STEP #5

1. CONNECT LASER DIODE CABLES:
A.J 562-1266-501 (RED) TO E1 ON POWER DRIVER PCB (562-1068-501).
B.J 562-1266-502 (BLACK) TO E2 ON POWER DRIVER PCB (562-1068-501).
TORQUE TO 10 IN-CH 24/99N TWICE.
2. ATTACH THE (2) REAR FAN CABLES TO P1 & P2 ON POWER DRIVER PCB (562-1068-501).
ATTACH (2) SIDE FAN CABLE TO P3 ON POWER DRIVER PCB (562-1068-501).
3. ATTACH (2) TEC CABLES TO J17 & J18 ON POWER DRIVER PCB (562-1068-501).
4. CONNECT (2) FLAT CABLES (022-1779):
A.J FROM MID EXT. AUX OPT. SENSOR PCB (562-1219-501) TO LASER CONTROLLER PCB (562-1002-501).
B.J FROM TOP LASER SENSOR PCB (562-1070-501) TO LASER CONTROLLER PCB (562-1002-501).
5. CONNECT FLAT CABLE (022-1853) FROM BOTTOM LASER SENSOR PCB (562-1075-501) TO LASER CONTROLLER PCB (562-1002-501).
6. CONNECT ETHERNET CABLE (023-1121) OR (562-1378-001) ENDS FROM LASER CONTROLLER PCB (562-1002-501) TO PROGRAMMED PROCESSOR ASSY (562-1034-XXX) AS SHOWN.
7. CONNECT FLAT CABLE (022-1741) FROM FRONT RFID PCB (562-1042-001) TO LASER CONTROLLER PCB (562-1002-501).
8. ATTACH REAR PCB EXIT GADGET (562-1075-001) ONTO POWER DRIVER PCB (562-1068-501) AS SHOWN.

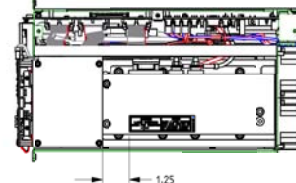


SCALE: 2:5 SHEET 11 OF 16

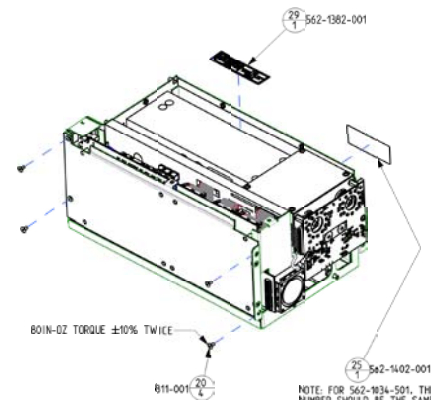
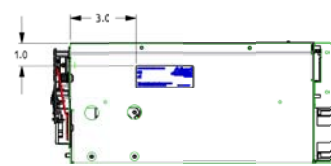
STEP #6

1. ATTACH CHASSIS SIDE PANEL (562-1306-001) INTO BOTTOM OF CHASSIS AND SECURE WITH HARDWARE AS SHOWN.
2. STICK ON CAUTION RADIATION LABEL (562-1382-001) AS SHOWN.
3. CREATE SERIAL NO. ENG ID LABEL (562-1402-001) PER MAP (992-5420-057).
4. STICK ON SERIAL NO. ENG ID LABEL (562-1402-001) AS SHOWN.

TOP VIEW



RIGHT SIDE VIEW

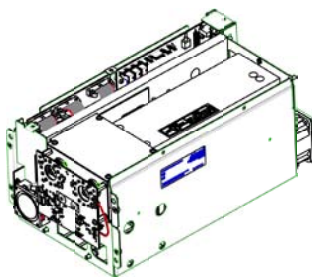


NOTE: FOR 562-1034-501, THE SERIAL NUMBER SHOULD BE THE SAME AS SERIAL NUMBER OF PUREPOINT SYSTEM OR CONSTELLATION KIT LASER MODULE

SCALE: 2:5 SHEET 12 OF 16

STEP #7

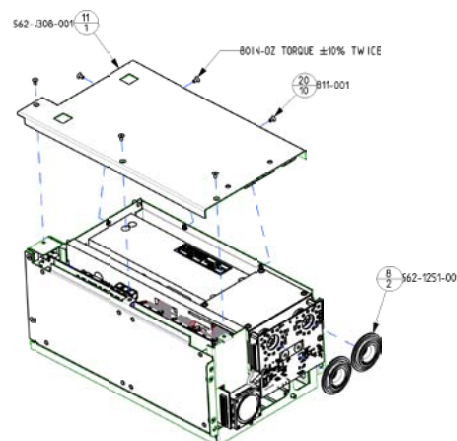
1. TEST ASSEMBLED CORE MODULE PER MTP 907-5620-025 SECS 3, 4, 5, 6, 9 & 10
2. USE TEST FIXTURE 995-5620-050 TO FACILITATE TESTING.
3. TEST ASSEMBLED CORE MODULE 562-1034-501/501S PER MTP 907-2120-058.
4. USE TEST FIXTURE 995-2120-744.



SCALE: 2:5 SHEET 13 OF 16

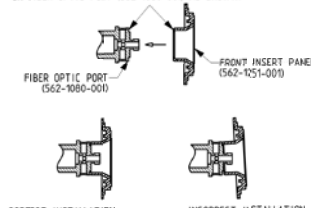
STEP #8

1. ATTACH CHASSIS LID (562-1308-001) AND SECURE WITH HARDWARE AS SHOWN.
2. ATTACH FRONT INSERT PANELS (562-1251-001) AS SHOWN.

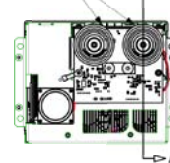


SECTION A-A, ASSEMBLY INSTRUCTIONS

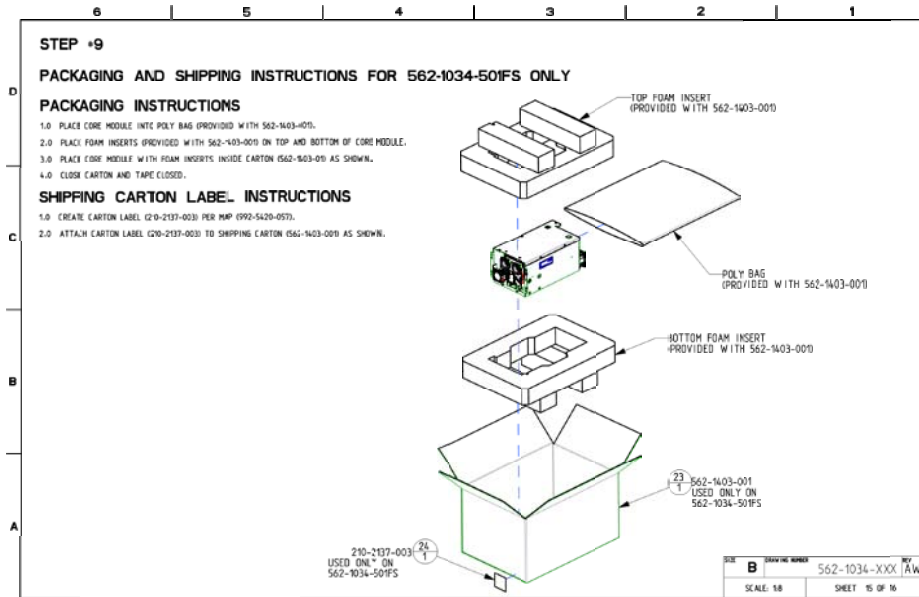
ENSURE THAT FRONT INSERT PANELS (562-1251-001) ARE PROPERLY SEATED AGAINST THE SURFACE INDICATED ON FIBER OPTIC PORT (562-1080-001) AS SHOWN.



ORIENT FRONT INSERT PANELS (562-1251-001) AS SHOWN.



SCALE: 2:5 SHEET 14 OF 16



NOTE: Page 16 of 562-1034-XXX is a checklist for assembly documentation and is not included in this manual.

562-1564-501 ASSY, CORE MODULE

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	562-1545-551	ASSY,PCB,PURE POINT CR	1
002	562-1041-502	ASSY,ENGINE,LASER CR3	1
004	022-179	CABLE,FLAT,20P DBL END 3IN	2
005	022-174	CABLE,FLAT,F-F 50P .050 6IN	1
007	562-1475-001	GASKET,REAR,PCB EXIT	1
008	562-1251-001	PANEL ASSY,INSERT,FRONT PTD	2
009	562-1275-001	GASKET,CHASSIS,LASER	1
010	562-1399-501	ASSY,CHASSIS	1
011	562-1308-001	LID ASSY,CHASSIS	1
012	562-1309-001	SIDE ASSY,CHASSIS	1
013	562-1448-001	GASKET,DIVIDER,AIRFLOW	1
020	811-001	SCREW,FLAT HD SKT,M3X6 SST	10
025	562-1402-002	LABEL,SERIAL NO,ENG ID CR	1
026	562-1506-501	ASSY,CABLE,POWER ENGINE POS	1
027	562-1506-502	ASSY,CABLE,POWER ENGINE NEG	1
029	562-1382-001	LABEL,PCB REMOVED,RADIATION	1
030	809-001	SCREW,BTN HD SKT,M3X6 SST	8
032	022-185	CABLE,FLAT,20P DBL END 4IN	1
033	562-1516-SSC	KIT,SSC,MECH WEST	1
034	562-1512-SSC	KIT,SSC,CABLES 2	1
035	562-1518-SSC	KIT,SSC,SHEET-METAL NGL	1
036	562-1511-SSC	KIT,SSC,CABLES 1	1
037	562-1502-552	ASSY,PCB,RFID FRONT PANEL	1
038	562-1073-551	ASSY,PCB,PROBE DETECTOR	1
039	562-1219-551	ASSY,PCB,JEN SNSR MID EXT	1
040	562-1075-551	ASSY,PCB,SENSOR BOTTOM,LASER	1
041	786-314	SCREW,CAP HD SKT,4-40X.437 SST	2
042	801-003	WASHER,FLAT,M3 SST	8
043	816-008	STANDOFF,M/F,M3.0X6MMX14 SST	4
044	807-013	SCREW,CAP HD SKT,M4X8 SST	2
045	801-004	WASHER,FLAT,M4 SST	1

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.

2. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.

3. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.

4. LABELING VERIFICATION
A. CLEAR WORK AREA OF ANY PREVIOUS LABELING OPERATIONS.
B. VERIFY THAT ALL LABELS HAVE BEEN RECEIVED.
C. VERIFY P/N AND REV. LETTER AGAINST AS400 P/N AND REV. LETTER.
D. VERIFY LABEL INSTALLATION PER MIP 562-1564-XXX.
E. DATE AND STAMP TABLE 2 AFTER COMPLETION.

5. LASER SAFETY GLASSES SHALL BE WORN FOR THE WAVE LENGTH OF 532nm WITH J MIN OD > 3.7 AND AN OD > 0.76 FOR 635nm.

6. ESD PRECAUTIONS SHALL BE TAKEN WHILE HANDLING ESD SENSITIVE COMPONENTS.

7. ASSEMBLE PER MAP 992-5620-008 AND TEST PER MTP 907-5620-025 OR 907-5620-001 (FS ONLY)

8. SEE STEP 5. FOR -501'S ONLY. CONNECT ETHERNET CABLE (562-1548-001) TO LASER CONTROLLER PCBA (562-1545-551) AT LOCATION J2. FEED THE OTHER END OF THE CABLE THROUGH THE RECTANGULAR OPENING ON THE REAR OF THE LASER CHASSIS. LEAVE THIS END DISCONNECTED.

3D VIEW
SCALE 1:5

TABULATION BLOCK

PART NUMBER	REV	DESCRIPTION	PS PART NUMBER	DESCRIPTION
562-1564-501	H	ASSY,MODULE,CORE	562-1564-501'S [8]	ASSY,MODULE,CORE SERVICE

SEE SEPARATE PARTS LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	Y. WU	DATE 07/20/11	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF ALCON.	ASSY,MODULE,CORE
1	R. HURTARTE	DATE 07/20/11	Alcon VIAIR, CALIFORNIA 92088	ASSY,MODULE,CORE
1	J. FOSTER	DATE 07/20/11	DATE 2/23/2007	ASSY,MODULE,CORE
1	FORM REVISION	2/23/2007	NAME: 562-1564-XXX	VERSION: H.3

REVISION HISTORY

REV	ECN	DATE
PS	NOT RELEASED	01/09/12
A	CN032754ECN	10/15/12
B	CN035445ECN	09/26/12
C	CN030990ECN	02/26/13
D	CN043708ECN	05/20/13
E	CN045789ECN	10/12/13
F	CN047845ECN	10/09/13
G	CN050554ECN	11/26/13
H	CN050751ECN	02/23/13

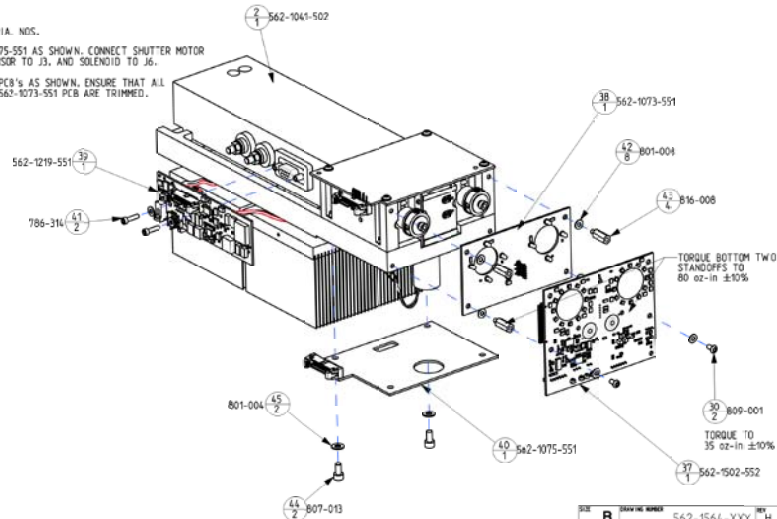
562-1564-XXX
H

NOTE: Page 2 of 562-1564-XXX is a data sheet for assembly documentation and is not included in this manual.

STEP 1

INSTALL PCB'S

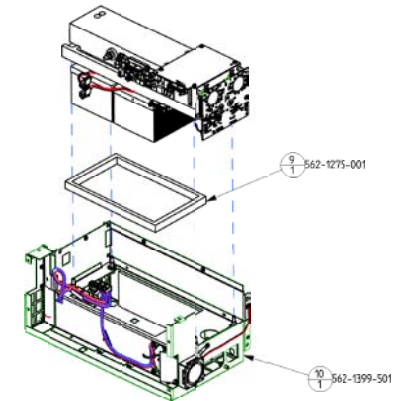
1. RECORD ALL PCB SERIAL NOS.
2. INSTALL PCB 562-1075-551 AS SHOWN. CONNECT SHUTTER MOTOR TO J1, SHUTTER SENSOR TO J3, AND SOLENOID TO J6.
3. INSTALL REMAINING PCB'S AS SHOWN. ENSURE THAT ALL LEADS ON BACK OF 562-1073-551 PCB ARE TRIMMED.



SCALE: 25 SHEET 3 OF 2

STEP 2

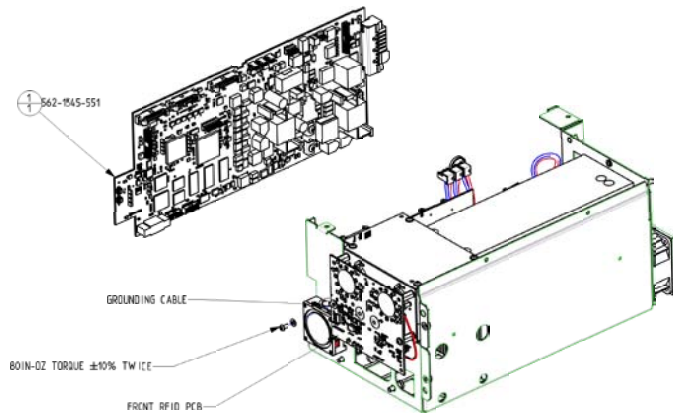
1. PLACE LASER CHASSIS GASKET (562-275-001) AROUND HEAT SINK.
2. SET LASER INTO 1/4" THREADED SPACERS IN CHASSIS (562-1399-501). ALTERNATELY TURN EACH SET OF MOUNTING HARDWARE A FEW THREADS AT A TIME FROM BOTTOM UNTIL TIGHT.
3. PLUG IN LASER FIRING TONE SPEAKER WIRE TO J8 ON 562-1502-552.



SCALE: 14 SHEET 4 OF 2

STEP 3

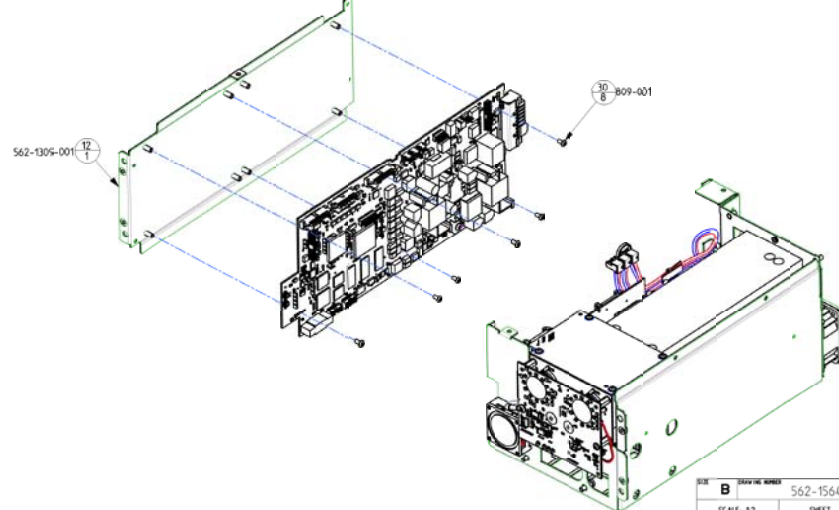
1. ATTACH GROUNDING CABLE (562-1556-501) FROM CHASSIS (562-1399-501) TO FRONT RFID PCB (562-1502-552) USING EXISTING HARDWARE FROM FRONT RFID PCB (562-1502-552).



SCALE: 12 SHEET 5 OF 2

STEP 4

1. FASTEN PCB (562-1545-551) TO CHASSIS SIDE PANEL (562-1309-001) WITH HARDWARE AS SHOWN.



SCALE: 12 SHEET 6 OF 2

STEP 5

1. CONNECT LASER DIODE CABLES WITH SUPPLIED HARDWARE FROM LASER ENGINE.

A.J 562-1506-501 (RED) TO POSITIVE (+) TERMINAL ON LASER ENGINE.
B.J 562-1506-502 (BLACK) TO NEGATIVE (-) TERMINAL ON LASER ENGINE.
TORQUE TO 20 IN-LB $\pm 10\%$.

2. CONNECT (1) FLAT CABLE (022-179) TO EACH:

A.J MID EXT JUN OPT SENSOR PCB (562-1219-551)
B.J BOTTOM LASER SENSOR PCB (562-1075-551).
C.J TOP LASER SENSOR PCB (562-1070-551).

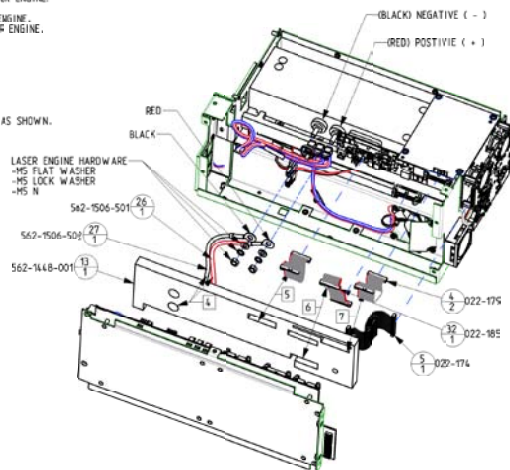
3. CONNECT FLAT CABLE (022-174) TO FRONT RFID PCB (562-1502-552) AS SHOWN.

4. ROUTE CABLE 562-1506-501 (RED) AND 562-1506-502 (BLACK) THRU THE AIRFLOW GASKET DIVIDER (562-1448-001) AS INDICATED.

5. ROUTE 20P FLAT CABLE (022-179 THRU THE AIRFLOW GASKET DIVIDER (562-1448-001) AS INDICATED.

6. ROUTE 20P FLAT CABLE (022-185 THRU THE AIRFLOW GASKET DIVIDER (562-1448-001) AS INDICATED.

7. ROUTE 20P FLAT CABLE (022-179 THRU THE AIRFLOW GASKET DIVIDER (562-1448-001) AS INDICATED.



SCALE: 25 SHEET 7 OF 2

STEP 6

1. CONNECT LASER DIODE CABLES:

A.J 562-1506-501 (RED) TO E1 ON LASER CONTROLLER PCB (562-1545-551).
B.J 562-1506-502 (BLACK) TO E2 ON LASER CONTROLLER PCB (562-1545-551).
TORQUE TO 10 IN-LB $\pm 10\%$ TWICE.

2. ATTACH THE (2) REAR FAN CABLES TO P1 & P2 ON LASER CONTROLLER PCB (562-1545-551).
ATTACH (1) SIDE FAN CABLE TO P3 ON LASER CONTROLLER PCB (562-1545-551).

3. ATTACH (2) TEE CABLES TO J17 & J19 ON LASER CONTROLLER PCB (562-1545-551).

4. CONNECT (2) FLAT CABLES (022-179).

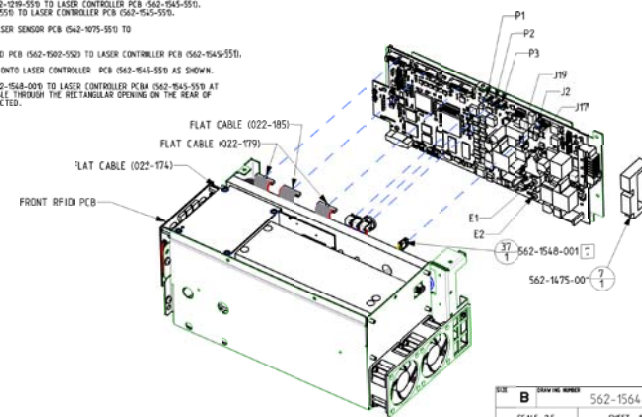
A.J FROM MID EXT JUN OPT SENSOR PCB (562-1219-551) TO LASER CONTROLLER PCB (562-1545-551).
B.J FROM TOP LASER SENSOR PCB (562-1070-551) TO LASER CONTROLLER PCB (562-1545-551).

5. CONNECT FLAT CABLE (022-185) FROM BOTTOM LASER SENSOR PCB (562-1075-551) TO LASER CONTROLLER PCB (562-1545-551).

6. CONNECT FLAT CABLE (022-174) FROM FRONT RFID PCB (562-1502-552) TO LASER CONTROLLER PCB (562-1545-551).

7. ATTACH REAR PCB OPT GASKET (562-1476-001) INTO LASER CONTROLLER PCB (562-1545-551) AS SHOWN.

8. FOR -50°F ONLY, CONNECT ETHERNET CABLE (562-1548-001) TO LASER CONTROLLER PCB (562-1545-551) AT LOCATION J2. FEED THE OTHER END OF THE CABLE THROUGH THE RECTANGULAR OPENING ON THE REAR OF THE LASER CHASSIS. LEAVE THIS END DISCONNECTED.



SCALE: 25 SHEET 8 OF 2

STEP 7

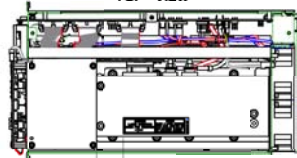
1. ATTACH CHASSIS SIDE PANEL (562-1306-000) INTO BOTTOM OF CHASSIS AND SECURE WITH HARDWARE AS SHOWN.

2. STICK ON CAUTION RADIATION LABEL (562-1382-001) AS SHOWN.

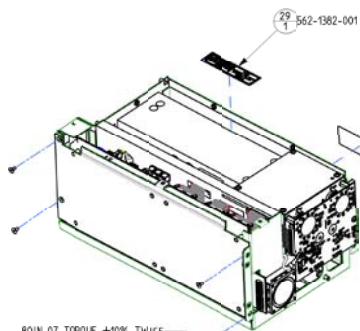
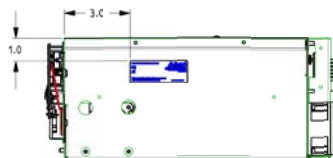
3. CREATE SERIAL NO. ENG ID LABEL (562-1402-002) PER MAP (992-5420-057).

4. STICK ON SERIAL NO. ENG ID LABEL (562-1402-002) AS SHOWN.

TOP VIEW



RIGHT SIDE VIEW



NOTE: FOR 562-1564-501, THE SERIAL NUMBER SHOULD BE THE SAME AS SERIAL NUMBER OF PUREPOINT SYSTEM OR CONSTELLATION KIT LASER MODULE

SCALE: 25 SHEET 9 OF 2

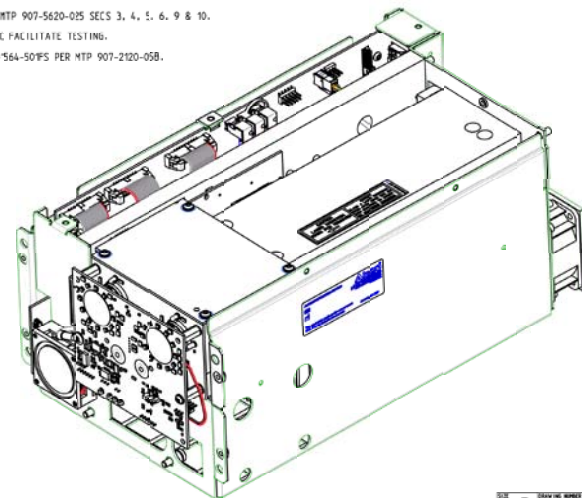
STEP 8

1. TEST ASSEMBLED CORE MODULE PER MTP 907-5620-015 SECS 3, 4, 5, 6, 9 & 10.

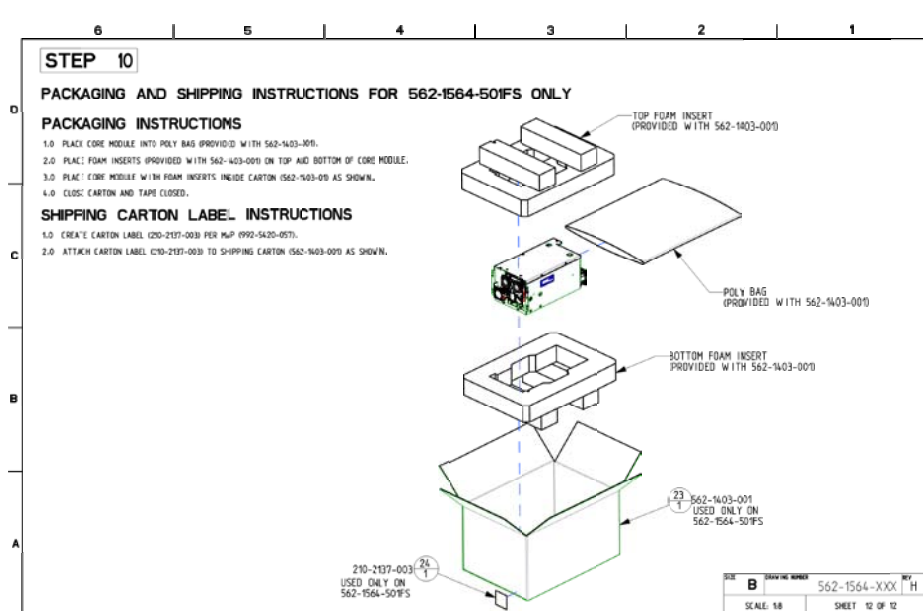
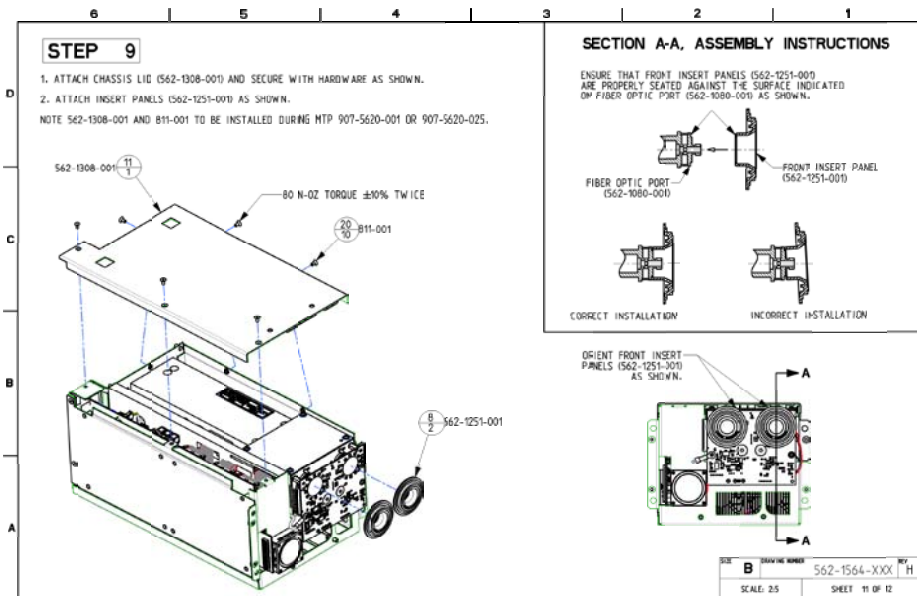
2. USE TEST FIXTURE 595-5620-050 TO FACILITATE TESTING.

3. TEST ASSEMBLED CORE MODULE 562-564-501'S PER MTP 907-2120-05B.

4. USE TEST FIXTURE 595-2120-744.



SCALE: 34 SHEET 10 OF 12

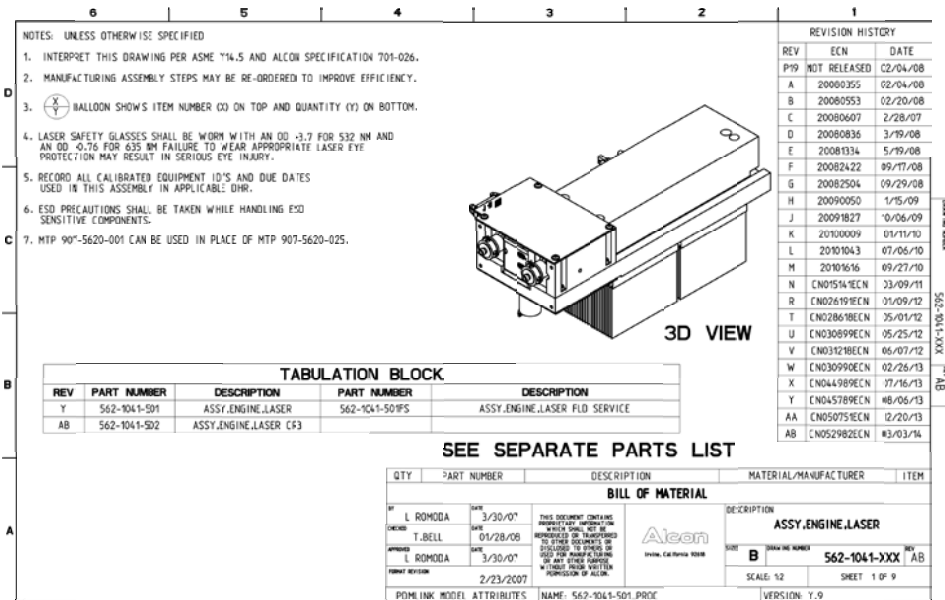


562-1041-501 ASSY, ENGINE, LASER

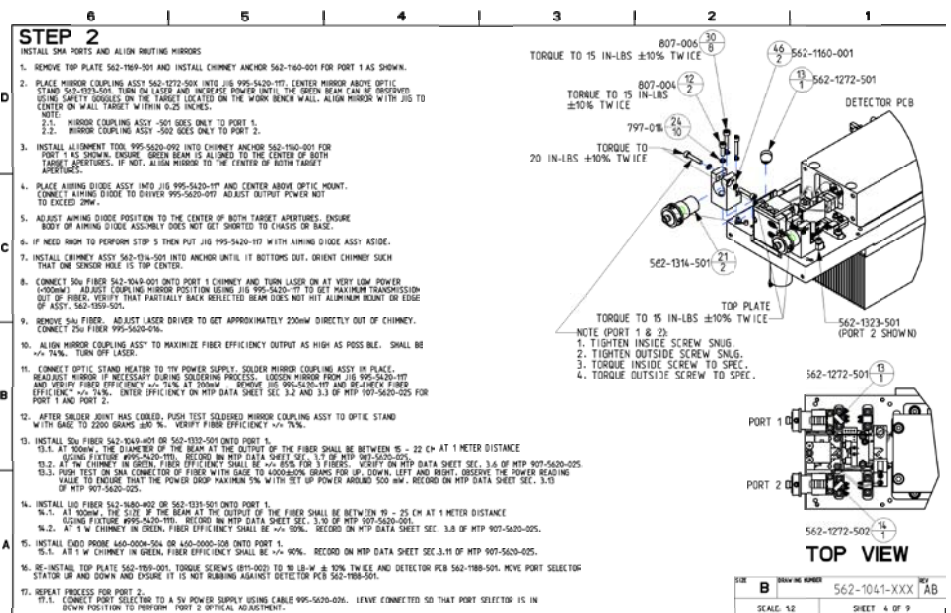
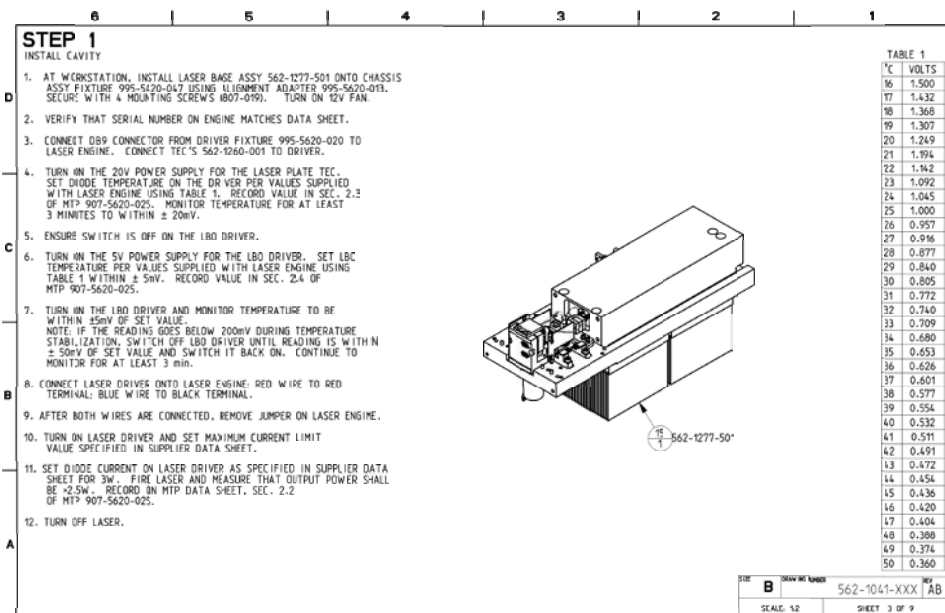
ITEM #	PART NUMBER	DESCRIPTION	QTY
002	562-1070-501	ASSY,PCB,SENSOR TOP LASER	1
007	562-1191-001	ENCLOSURE,LASER,SECONDARY	1
012	807-004	SCREW,CAP HD SKT,M3X10 SST	2
013	562-1272-501	ASSY,COUPLING,MIRROR PORT 1	1
014	562-1272-502	ASSY,COUPLING,MIRROR PORT 2	1
015	562-1277-501	ASSY,BASE,LASER ENGINE	1
017	562-1299-501	ASSY,CABLE,PHOTO DETECT	2
020	562-1557-501	ASSY,AIMING BEAM DIODE,SVC	2
021	562-1314-501	ASSY,CHIMNEY	2
024	797-014	WASHER,SPLT LK,.11X.21X.03 SST	13
027	801-003	WASHER,FLAT,M3 SST	4
028	807-003	SCREW,CAP HD SKT,M3X8 SST	4
030	807-006	SCREW,CAP HD SKT,M3X16 SST	11
035	809-002	SCREW,BTN HD SKT,M3X8 SST	4
038	821-028	SPACER,3.1X6.0X3MM,SST	2
046	562-1160-001	ANCHOR,CHIMNEY	2
047	040-003	TUBING,HEAT SHRINK,.375 ID BLK	0.1041
049	562-1188-501	ASSY,PCB,MIRROR POS DETECTOR	1
050	809-110	SCREW,BTN HD SKT,M2X6 SST	1
051	892-102	ADHESIVE,THREADLOCKER,222 PRP	AR
AR = As Required			

562-1041-502 ASSY, ENGINE, LASER CR3

ITEM #	PART NUMBER	DESCRIPTION	QTY
002	562-1070-551	ASSY,PCB,SENSOR TOP LASER	1
007	562-1191-001	ENCLOSURE,LASER,SECONDARY	1
012	807-004	SCREW,CAP HD SKT,M3X10 SST	2
013	562-1272-501	ASSY,COUPLING,MIRROR PORT 1	1
014	562-1272-502	ASSY,COUPLING,MIRROR PORT 2	1
015	562-1277-501	ASSY,BASE,LASER ENGINE	1
017	562-1299-501	ASSY,CABLE,PHOTO DETECT	2
020	562-1557-501	ASSY,AIMING BEAM DIODE,SVC	2
021	562-1314-501	ASSY,CHIMNEY	2
024	797-014	WASHER,SPLT LK,.11X.21X.03 SST	13
027	801-003	WASHER,FLAT,M3 SST	4
028	807-003	SCREW,CAP HD SKT,M3X8 SST	4
030	807-006	SCREW,CAP HD SKT,M3X16 SST	11
035	809-002	SCREW,BTN HD SKT,M3X8 SST	4
038	821-028	SPACER,3.1X6.0X3MM,SST	2
046	562-1160-001	ANCHOR,CHIMNEY	2
047	040-003	TUBING,HEAT SHRINK,.375 ID BLK	0.1041
049	562-1188-551	ASSY,PCB,MIRROR POS DETECTOR	1
050	809-110	SCREW,BTN HD SKT,M2X6 SST	2
051	809-102	SCREW,BTN HD SKT,M4X6 SST	0



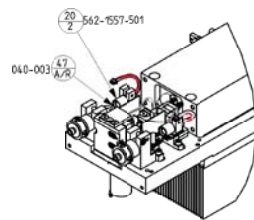
NOTE: Page 2 of 562-1041-XXX is a data sheet for assembly documentation and is not included in this manual.



STEP 3

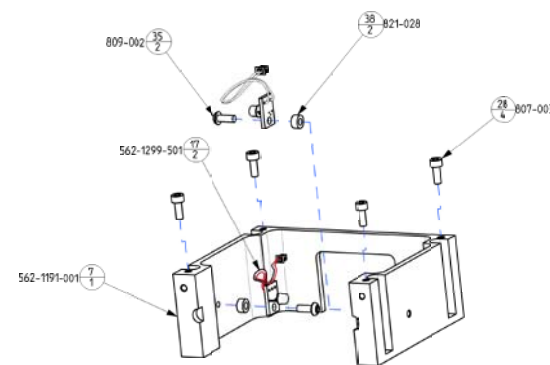
INSTALL AND ALIGN AIMING DIODES

- (562-1298-501) AND (562-1484-001) ONLY:
CUT (2) PIECES OF HEAT SHRINK TUBE (040-003), (1) PIECE TO BE APPROX. .14" AND (1) PIECE TO BE APPROX. .18" PLACE THE .14" LONG OF HEAT SHRINK TUBE OVER AIMING DIODE BARREL AS SHOWN. INSTALL AIMING DIODE (562-1298-501) INTO CARRIER 562-1313-501. PLACE THE .38" LONG HEAT SHRINK TUBE OVER AIMING DIODE BARREL. HEAT BOTH HEAT SHRINK TUBES WITH HEAT GUN UNTIL TUBING SHRINKS. APPLY GYPTAL (892-063) TO .38" HEAT SHRINK TUBE AS SHOWN. CONNECT AIMING CABLE TO DRIVER 995-5520-017. CHECK THAT DIODE OUTPUT IS AT LEAST 2mW AND LESS THAN 1.8mW.
- DELETE0.
- DELETE0.
- PLACE ASSY INTO JIG 995-5420-117 AND CENTER ABOVE OPTIC MOUNT. CONNECT AIMING DIODE TO DRIVER 995-5420-017. ADJUST OUTPUT POWER. NOT TO EXCEED 2mW.
- TURN ON LASER DRIVER AND INCREASE POWER UNTIL THE GREEN BEAM CAN BE OBSERVED WITH SAFETY GLASSES.
- ADJUST AIMING DIODE POSITION TO BE CONCENTRIC WITH GREEN BEAM AS PROJECTED THRU CHIMNEY AND ALSO CONCENTRIC WITH THE GREEN LEAKAGE FROM MIRROR. TURN OFF GREEN LASER.
- CONNECT 50u FIBER 542-1049-001 ONTO PORT. ADJUST AIMING DIODE POSITION USING JIG TO GET MAXIMUM TRANSMISSION OUT OF FIBER.
- CONNECT 25u FIBER 995-5620-016. OBTAIN MAXIMUM FIBER TRANSMISSION BY ADJUSTING JIG. TURN OFF AIMING DIODE DRIVER.
- CONNECT OPTIC STAND HEATER TO 11V POWER SUPPLY SOLDER DIODE CARRIER INTO PLACE ON OPTIC STAND. VERIFY FIBER TRANSMISSION DOES NOT DROP. LOOSEN AIMING BEAM FROM JIG AND VERIFY THAT THE TRANSMISSION DOES NOT DROP. REMOVE JIG AND VERIFY FIBER TRANSMISSION DOES NOT DROP AGAIN.
- AFTER SOLDER JOINT HAS COOLED, PUSH TEST SOLDERED DIODE CARRIER ASSY TO OPTIC STAND WITH GAGE TO 2200 \pm 10% GRAMS. VERIFY FIBER TRANSMISSION DOES NOT DROP AGAIN.
- INSTALL 50u FIBER 542-1049-001 OR 562-1332-501 ONTO PORT 1.
a. A MING BEAM FIBER EFFICIENCY SHALL BE \geq 80%. RECORD ON MTP DATA SHEET SEC. 3.5. (PORT1/PORT2)
b. PUSH TEST ON SMA CONNECTOR OF FIBER WITH GAGE TO 4000 \pm 10% GRAMS FOR UP, DOWN, LEFT, AND RIGHT. OBSERVE THE POWER READING VALUE TO ENSURE THAT THE POWER DROP MAXIMUM. 10% WITH SET UP POWER AROUND 1mW RECORD ON MTP DATA SHEET SEC. 3.14 (PORT1/PORT2)
- INSTALL 110 FIBER 542-1480-002 ONTO PORT 1.
a. A MING BEAM FIBER EFFICIENCY MUST BE \geq 70%. RECORD ON MTP DATA SHEET SEC. 3.9. (PORT1/PORT2)
- INSTALL ENDO PROBE 460-0000-504 ONTO PORT 1.
a. A MING BEAM FIBER EFFICIENCY SHALL BE \geq 80%. RECORD ON MTP DATA SHEET SEC. 3.12. (PORT1/PORT2)
- REPEAT FOR PORT 2
a. CONNECT PORT SELECTOR TO A 2V POWER SUPPLY USING CABLE 995-5620-026. LEAVE CONNECTED SO THAT PORT SELECTOR IS IN DOWN POSITION TO PERFORM PORT 2 OPTICAL ADJUSTMENT.



SIZE B DRAWING NUMBER 562-1041-XXX AB
SCALE: 1:2 SHEET 5 OF 9

STEP 4

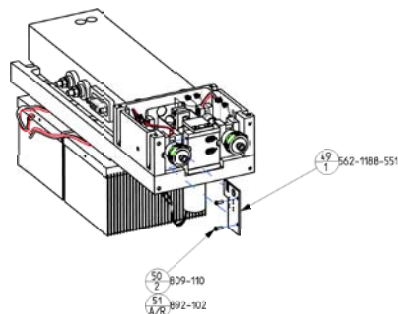


SIZE B DRAWING NUMBER 562-1041-XXX AB
SCALE: 1:1 SHEET 6 OF 9

STEP 5

INSTALL ENCLOSURE

- INSTALL COMPONENTS AS SHOWN.
- TURN ON LASER DRIVER AND SET OUTPUT TO POINT THAT GREEN BEAM CAN BE OBSERVED WITH SAFETY GLASSES.
- ALIGN SENSOR 562-1299-501 TO CAPTURE LEAKAGE FROM COUPLING MIRROR ON BOTH PORTS. USE TWEEZERS TO APPROXIMATELY CENTER GREEN LEAKAGE BEAM ON SENSOR FACE. ENSURE THAT SENSOR IS PARALLEL WITH BEAM.
- TURN OFF LASER AND ALL POWER SUPPLIES.
- RE-INSTALL JUMPER ON LASER ENGINE.
- DISCONNECT DRIVER FIXTURE 995-5620-020 AND LASER DRIVER FROM ENGINE.
- REMOVE LASER ASSY FROM FIXTURE 995-5420-047.
- REMOVE ALIGNMENT ADAPTER 995-5620-013.



SIZE B DRAWING NUMBER 562-1041-XXX AB
SCALE: 1:1 SHEET 7 OF 9

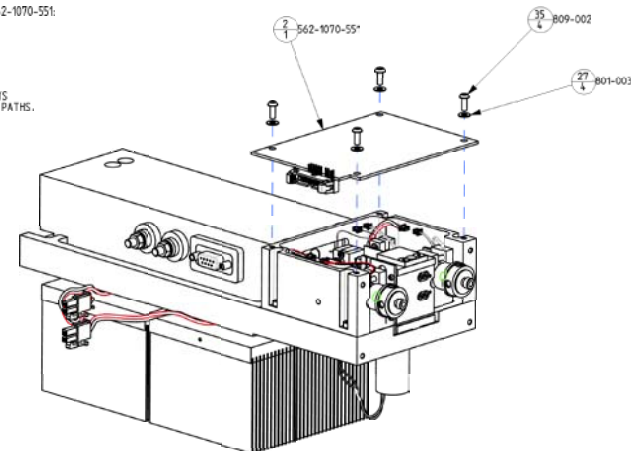
STEP 6

INSTALL PCB'S

- RECORD ALL PCB SERIAL NOS. IN TABLE #1 (SHT #2) BEFORE INSTALLATION.

- CONNECT THE FOLLOWING TO TOP SENSOR BOARD 562-1070-551:
a. PORT 1 AIMING BEAM TO J1.
b. PORT 2 AIMING BEAM TO J3.
c. PORT 1 PHOTO DIODE TO J10.
d. PORT 2 PHOTO DIODE TO J11.
e. PHON TO J8 & J9.

- INSTALL TOP SENSOR PCB 562-1070-551 AS SHOWN. MAKE SURE THAT THE PORT SELECTOR PCB CONNECTS TO IT AND ALL CABLING IS CLEAR OF LASER BEAM PATHS.



SIZE B DRAWING NUMBER 562-1041-XXX AB
SCALE: 3:4 SHEET 8 OF 9

NOTE: Page 9 of 562-1041-XXX is not included in this manual.

212-1008-501 ASSY, ILLUMINATOR AUX

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2205-001	COVER,BALLAST,AUX ILLUM	1
002	212-2235-502	ASSY,ENCLOSURE,OPTICS	1
003	807-001	SCREW,CAP HD SKT,M3X5 SST	9
004	212-2150-501	ASSY,BALLAST,AUX ILLUMINATOR	1
005	811-001	SCREW,FLAT HD SKT,M3X6 SST	21
006	212-2064-001	CHASSIS,AUX,ILLUMINATOR	1
007	212-3071-502	ASSY,FACE,ILLUMINATOR AUX IEC	1
008	212-2171-001	PIN,LATCH,MACHINED	1
009	770-098	SCREW,FH PH,M4X0.50X8 SST	4
010	212-1808-501	ASSY,PCB,AUX ILLUM CONTROL	1
011	807-005	SCREW,CAP HD SKT,M3X12 SST	3
012	212-3200-551	ASSY,PCB,ILLUMINATOR RFID CONT	1
013	212-2199-001	CABLE ASSY,ILLUM RFID	1
014	212-2198-001	CABLE ASSY,ILLUM BALLAST W50	1
015	212-2864-001	GASKET,COVER,CHASIS AUX ILLUM	2
016	212-2196-001	CABLE ASSY,ILLUM OPT INTFC	1
017	212-2356-001	DUCT,BALLAST,FAN AUX ILLUM	1
018	212-2357-001	DUCT,OPTICS,FAN AUX-ILLUM	1
019	212-2144-001	PLATE,CHASSIS,AUX ILLUM	1
020	212-2267-003	CABLE ASSY,FAN,W33	1
021	212-2868-001	GASKET,COVER,CHASSIS AUX ILLUM	2
022	807-003	SCREW,CAP HD SKT,M3X8 SST	12
023	212-2268-002	CABLE ASSY,FAN,W29	1
024	212-2128-001	BRACKET,BOTTOM,AUX ILLUM	2
026	807-002	SCREW,CAP HD SKT,M3X6 SST	3
027	807-007	SCREW,CAP HD SKT,M3X20 SST	1
028	212-2143-001	COVER,CHASSIS,AUX ILLUM	1
029	807-013	SCREW,CAP HD SKT,M4X8 SST	2
030	800-003	WASHER,SPLITLOCK,M3 SST	12
031	212-2974-001	LABEL,SERIAL NO,AUX ILLUM	1
032	825-153	SCREW,CAP HD SKT,M3X4 SST	4
033	212-2856-001	BLOCK,EJECT,AUX ILLUM	1
034	212-2886-001	GASKET,SKIN,ILLUM	1
035	212-2870-001	GASKET,DUCT,COVER AUX ILLUM	1
036	212-2863-001	GASKET,DUCT,FAN AUX ILLUM	1
037	212-3000-001	CABLE ASSY,FBR DETECT,MOUNTED	2
038	212-3335-001	SCREW,CAP HD SKT,M2.5X4.07 SST	2

212-1008-502 ASSY, ILLUMINATOR AUX

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2205-001	COVER,BALLAST,AUX ILLUM	1
002	212-2235-503	ASSY,ENCLOSURE,OPTICS AUX	1
003	807-001	SCREW,CAP HD SKT,M3X5 SST	9
004	212-2150-501	ASSY,BALLAST,AUX ILLUMINATOR	1
005	811-001	SCREW,FLAT HD SKT,M3X6 SST	21
006	212-2064-001	CHASSIS,AUX,ILLUMINATOR	1
007	212-3071-502	ASSY,FACE,ILLUMINATOR AUX IEC	1
008	212-2171-001	PIN,LATCH,MACHINED	1
009	770-098	SCREW,FH PH,M4X0.50X8 SST	4
010	212-1808-551	ASSY,PCB,AUX ILLUM CONTROL	1
011	807-005	SCREW,CAP HD SKT,M3X12 SST	3
012	212-3200-551	ASSY,PCB,ILLUMINATOR RFID CONT	1
013	212-2199-001	CABLE ASSY,ILLUM RFID	1
014	212-2198-001	CABLE ASSY,ILLUM BALLAST W50	1
015	212-2864-001	GASKET,COVER,CHASIS AUX ILLUM	2
016	212-2196-001	CABLE ASSY,ILLUM OPT INTFC	1
017	212-2356-001	DUCT,BALLAST,FAN AUX ILLUM	1
018	212-2357-001	DUCT,OPTICS,FAN AUX-ILLUM	1
019	212-2144-001	PLATE,CHASSIS,AUX ILLUM	1
020	212-2267-003	CABLE ASSY,FAN,W33	1
021	212-2868-001	GASKET,COVER,CHASSIS AUX ILLUM	2
022	807-003	SCREW,CAP HD SKT,M3X8 SST	12
023	212-2268-002	CABLE ASSY,FAN,W29	1
024	212-2128-001	BRACKET,BOTTOM,AUX ILLUM	2
026	807-002	SCREW,CAP HD SKT,M3X6 SST	3
027	807-007	SCREW,CAP HD SKT,M3X20 SST	1
028	212-2143-001	COVER,CHASSIS,AUX ILLUM	1
029	807-013	SCREW,CAP HD SKT,M4X8 SST	2
030	800-003	WASHER,SPLITLOCK,M3 SST	12
032	825-153	SCREW,CAP HD SKT,M3X4 SST	4
033	212-2856-001	BLOCK,EJECT,AUX ILLUM	1
034	212-2886-001	GASKET,SKIN,ILLUM	1
035	212-2870-001	GASKET,DUCT,COVER AUX ILLUM	1
036	212-2863-001	GASKET,DUCT,FAN AUX ILLUM	1
037	212-3000-001	CABLE ASSY,FBR DETECT,MOUNTED	2
038	212-3335-001	SCREW,CAP HD SKT,M2.5X4.07 SST	2

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.

2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.

3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.

4. DELETE.

5. FOR -502 E ONLY:

A. REPLACE THE FOLLOWING COMPONENTS:

- LAMP ALCON 1212-2235-501 OR 212-1338-501.
- CABLE ASSY. STEPPER MOTOR 212-2656-001 (2X)
- ASSY. PCB ATTENUATOR HOME SENSOR 212-213-502 (2X)
(NOTE FOR 11 AND 111: IF SERVICE INTERVAL IS GREATER THAN 90 DAYS (INSTALLATION DATE - REPLACEMENT DATE), REPLACE STEPPER MOTOR. OTHERWISE, RECORD INSTALLATION AND REPLACEMENT DATES ON PRR AND PROCEED WITH TESTING.)
- CONFIRM SYSTEM IS USING PCBA 212-1974-552 AND 212-1806-551. IF NOT, REMOVE PCBA'S AND REPLACE WITH 212-1974-553 AND 212-1806-551

B. VERIFY THE FOLLOWING COMPONENTS HAVE NO CRACKS, SCRATCHES OR OTHER VISIBLE DEFECTS.

- LENSES, ASPHERIC CONDENSING 212-1844-001 (2X)
- LENSES ASPHERIC COLLIMATING 212-1843-001 (2X)
- BLIND ATTENUATOR 212-2295-001 (2X)
- DECODE ATTENUATOR 212-2296-001 (2X)
- MIRROR COLD OPTICS 212-175-001 (2X)
- REFLECTOR DICHROIC, BEAR 212-1977-001 (2X)
- FILTER REFLECTION HEAT UV BLOCK 212-1528-001 (2X)

C. REVIEW ALL HARDWARE/PCB REVISIONS.

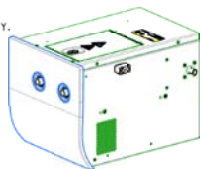
I. PERFORM ALL MANDATORY UPDATES AS REQUIRED

II. UPGRADE ANY OTHER HARDWARE/PCB COMPONENTS IF REVISION INVOLVES A MAJOR FUNCTIONAL CHANGE

D. FOR ALL UNITS PERFORM MTP'S:

- 907-2120-033
- 907-2120-079

6. ASSEMBLE PER MAP 990-2120-042. TEST PER 907-2120-079.



212-1008-501 SHOWN

3D VIEW

REVISION HISTORY		
REV	ECN	DATE
M	CN07739ECN	16/07/11
N	CN018050ECN	26/13/11
R	CN022495ECN	10/31/11
T	CN028793ECN	03/30/12
U	CN029469ECN	04/03/12
V	CN029889ECN	05/22/12
W	CN051875ECN	11/17/14
X	CN053875ECN	13/12/14
Y	CN054008ECN	03/25/14
AA	CN054592ECN	05/22/14

TABULATION					
CAT/REF/P/N	REV	DESCRIPTION	P/N	DESCRIPTION	P/N
212-1008-501	Y	ASSY.ILLUMINATOR,AUX	N/A	N/A	N/A
212-1008-502	AA	ASSY.KIT,AUX ILLUMINATOR	-502FS	ASSY.KIT,AUX ILLUMINATOR SVCE	-502E
				ASSY.KIT,AUX ILLUMINATOR EXCH	

SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	P. NGUYEN	DATE	08/22/06	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.
APPROVED	H. NGUYEN	DATE	03/06/08	
APPROVED	M. MARTIN	DATE	03/06/08	
DATE	2/23/2007			
POM INK MODEL ATTRIBUTES	NAME: 212-1008-XXX	VERSION: AA.0		

ASSY.ILLUMINATOR,AUX

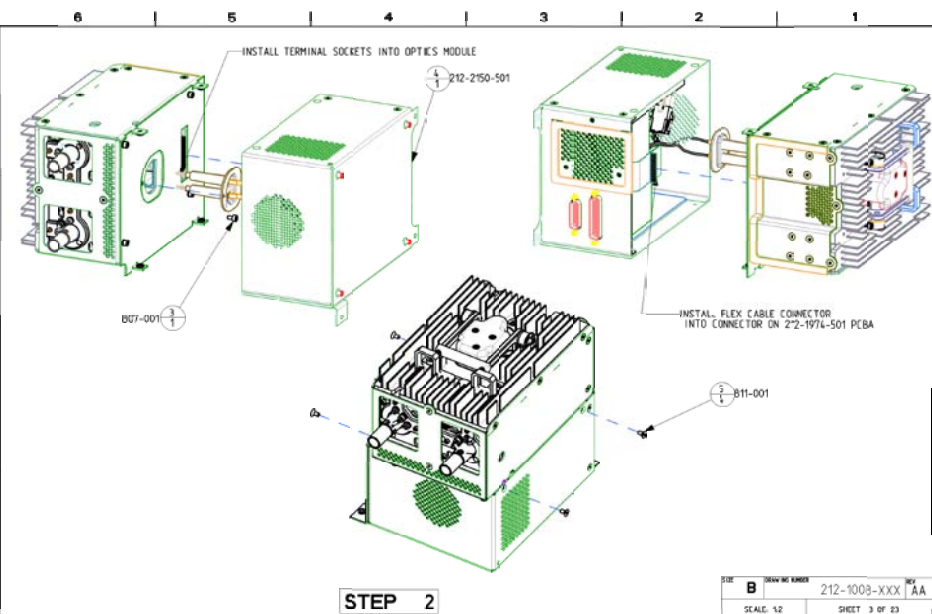
212-1008-XXX

SCALE: 1:1

SHEET 1 OF 23

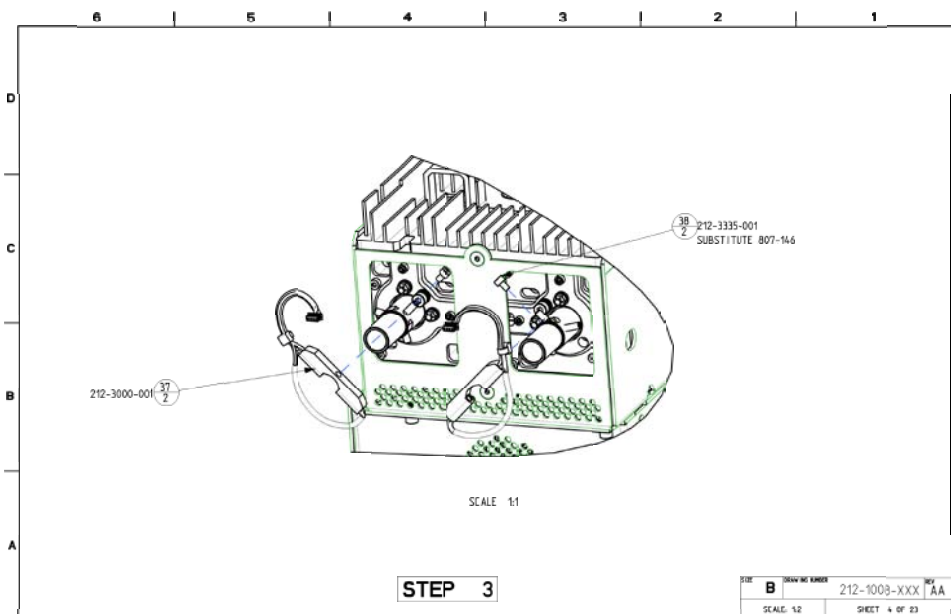
STEP 1

SIZE B DRAWING NUMBER 212-1008-XXX REV AA
SCALE: 1:2 SHEET 8 OF 23



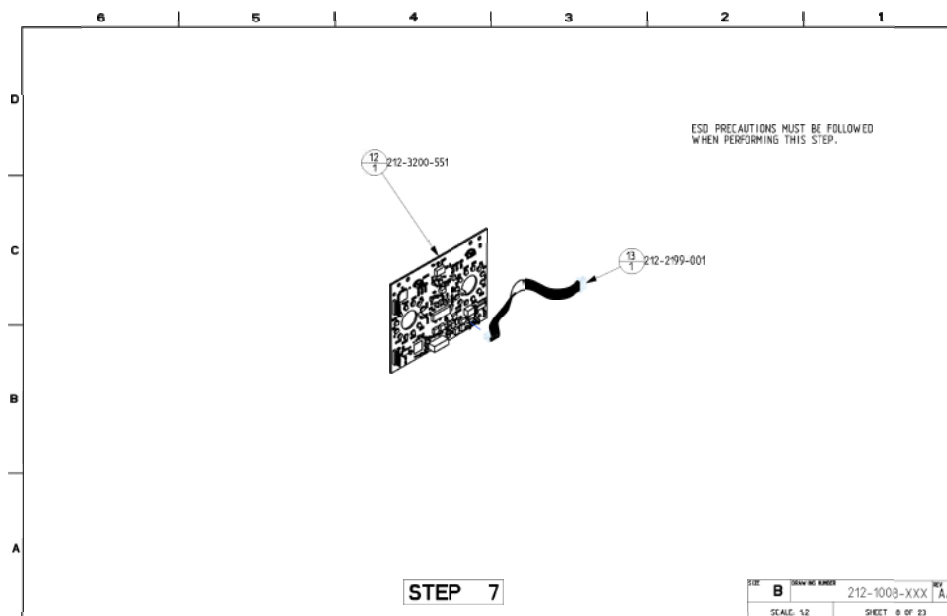
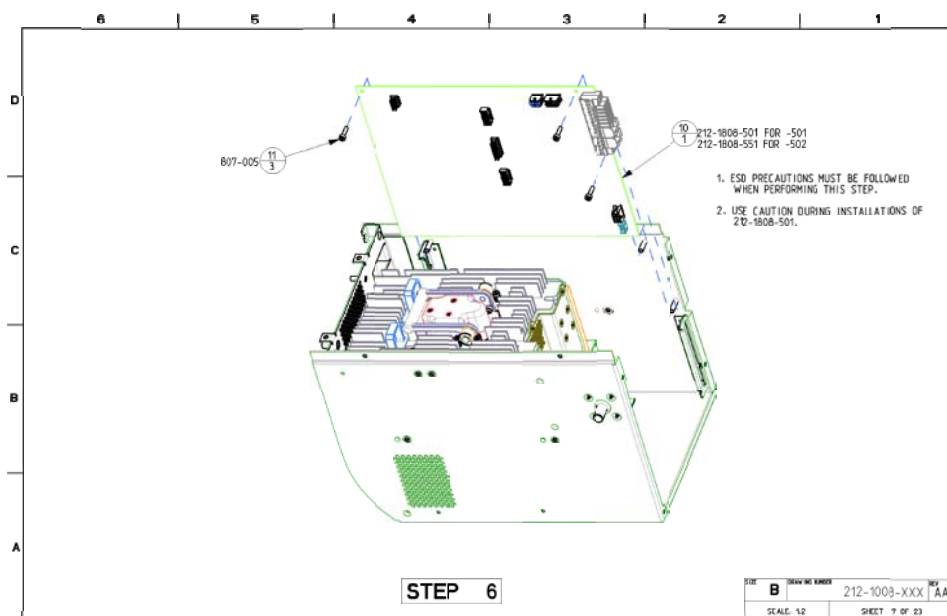
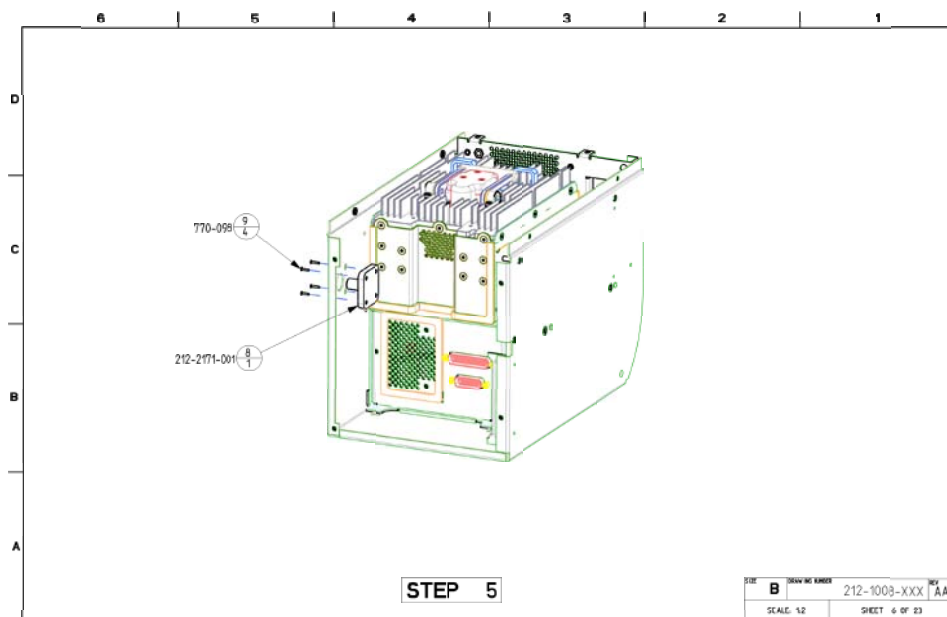
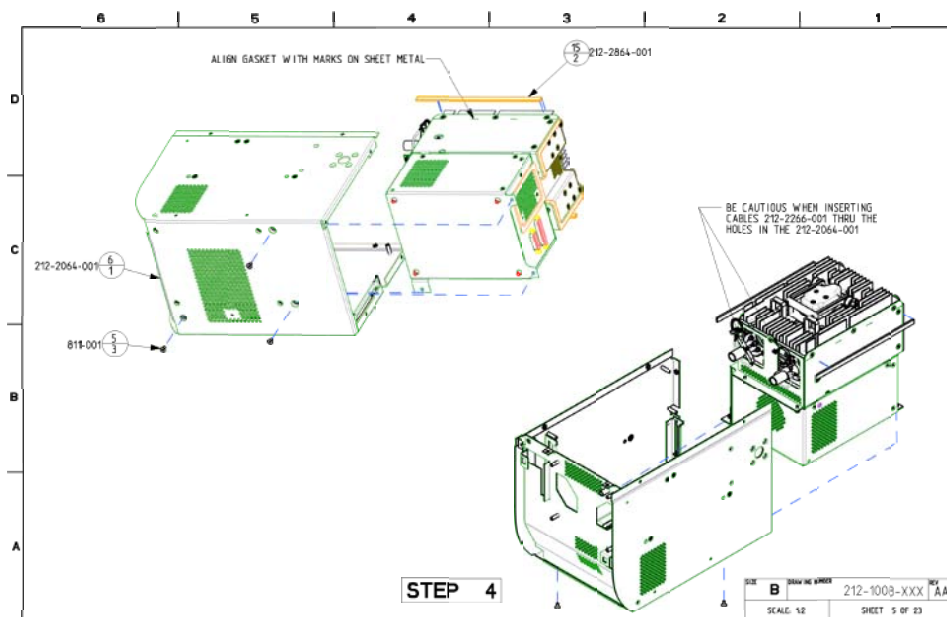
STEP 2

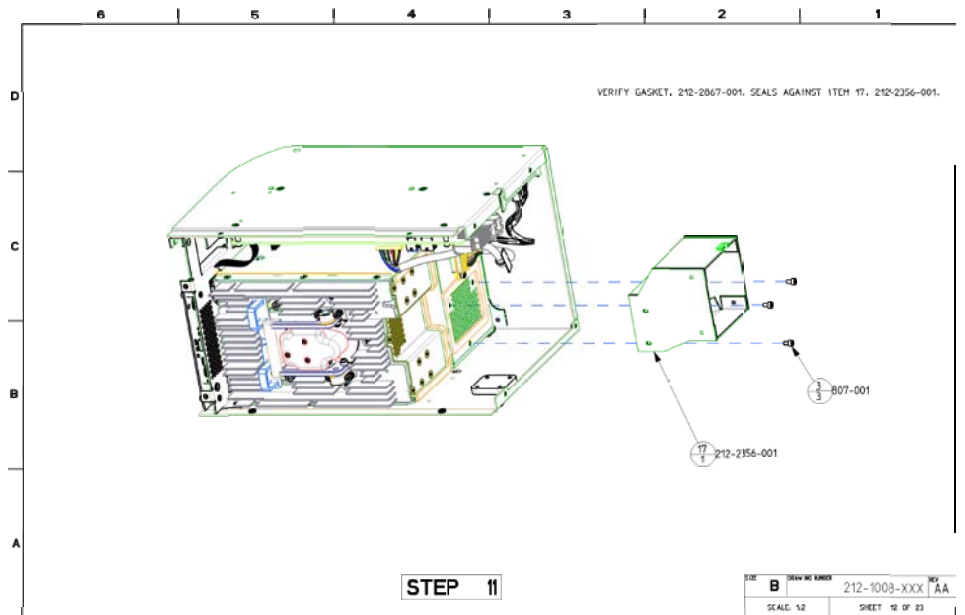
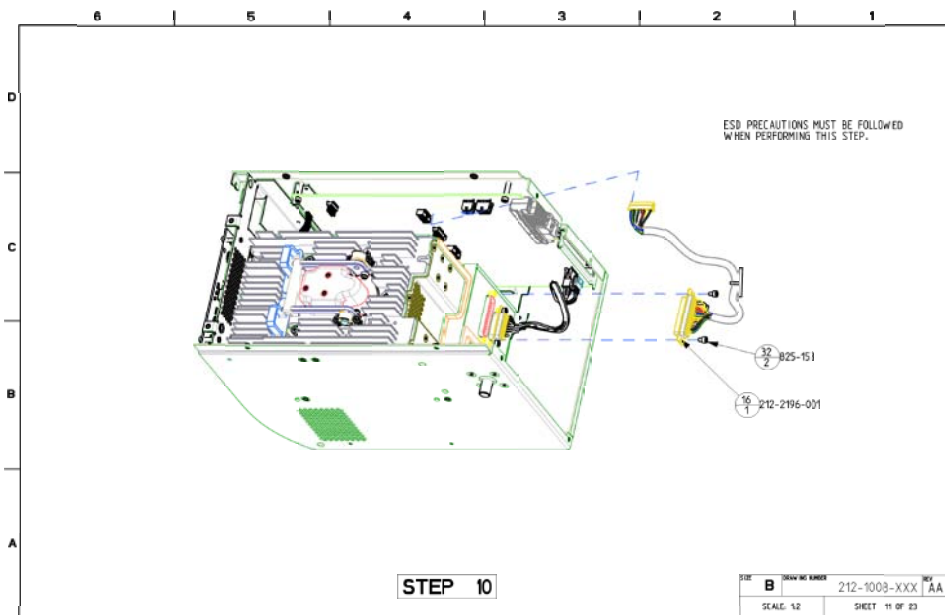
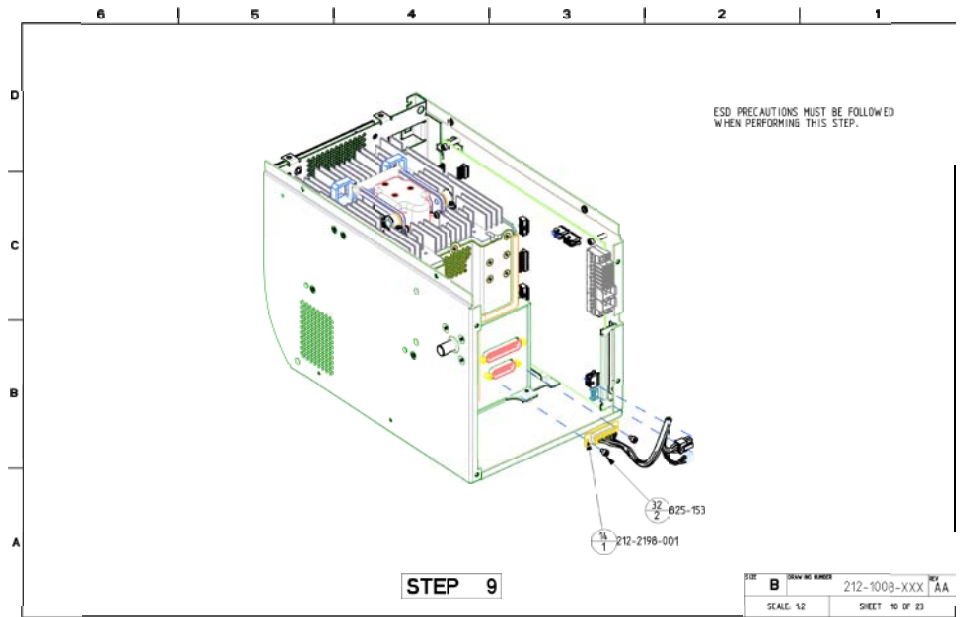
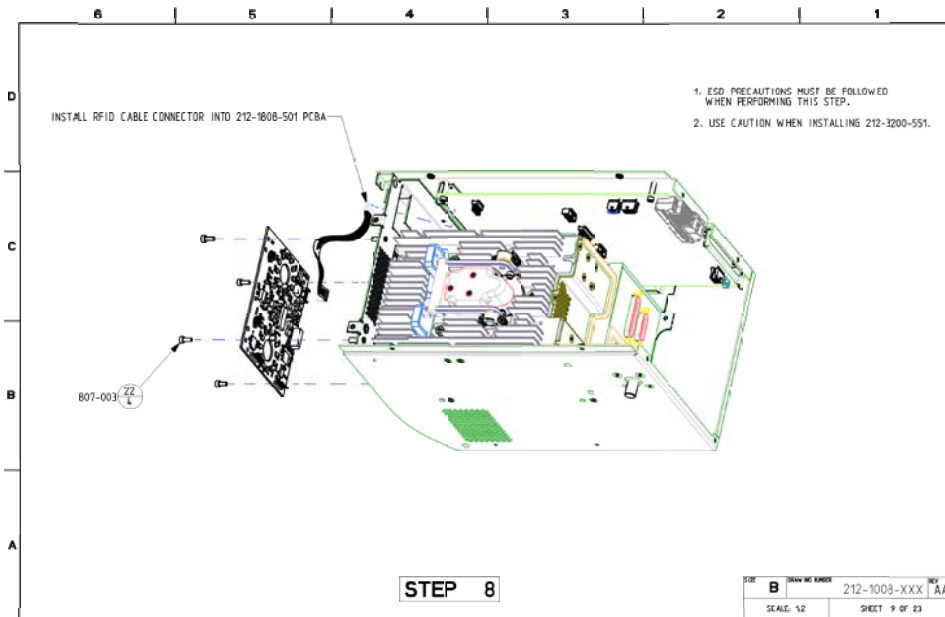
SIZE B DRAWING NUMBER 212-1008-XXX REV AA
SCALE: 1:2 SHEET 3 OF 23

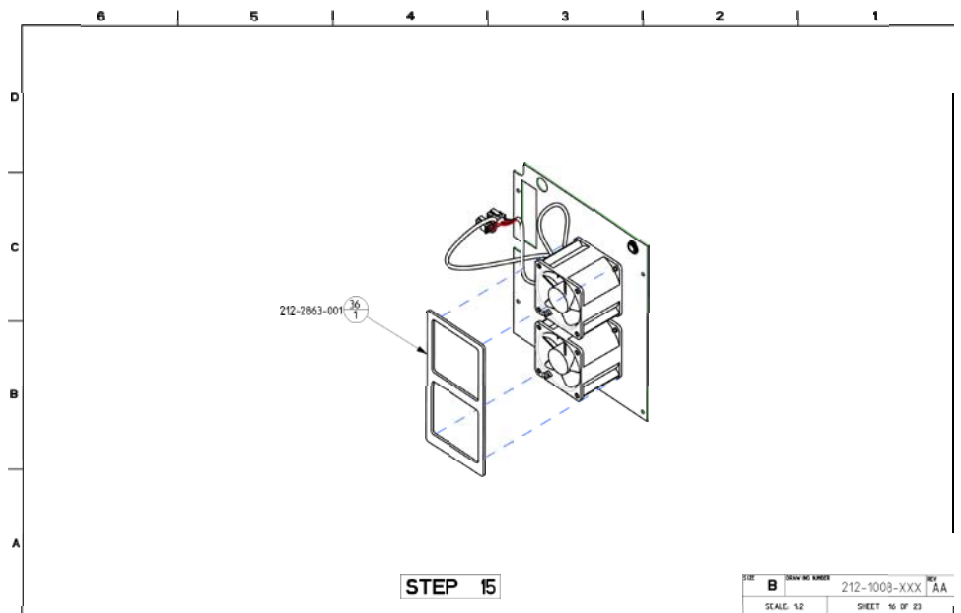
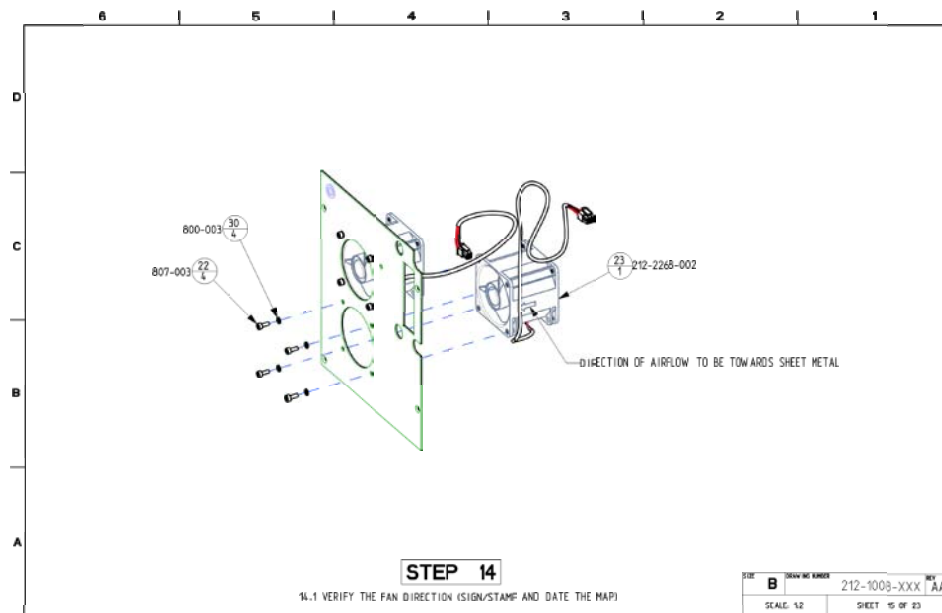
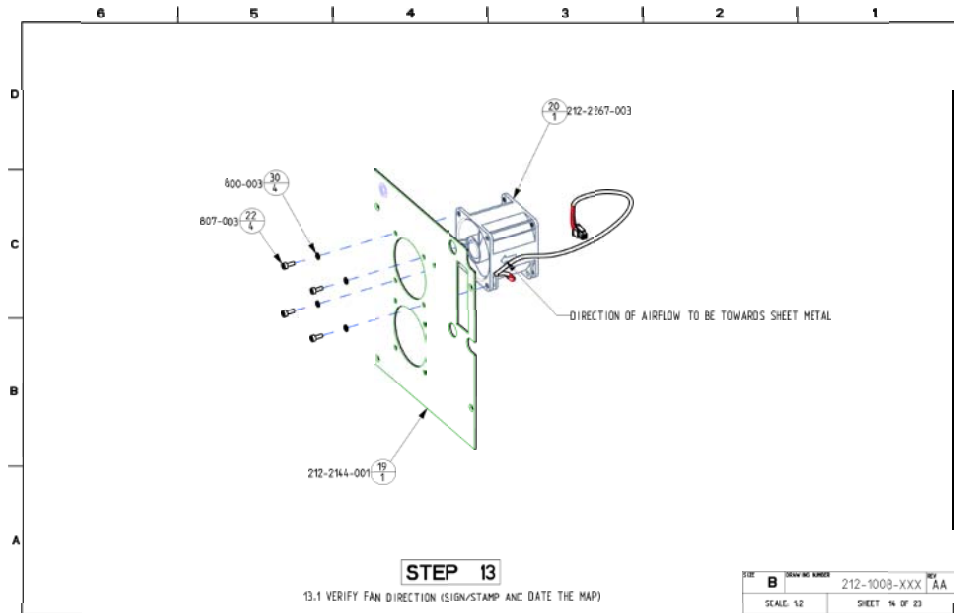
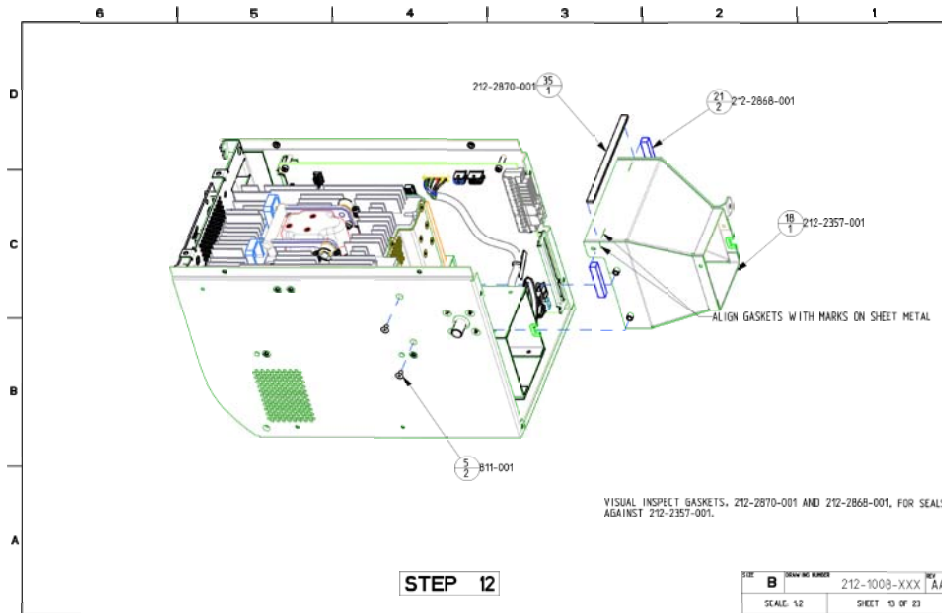


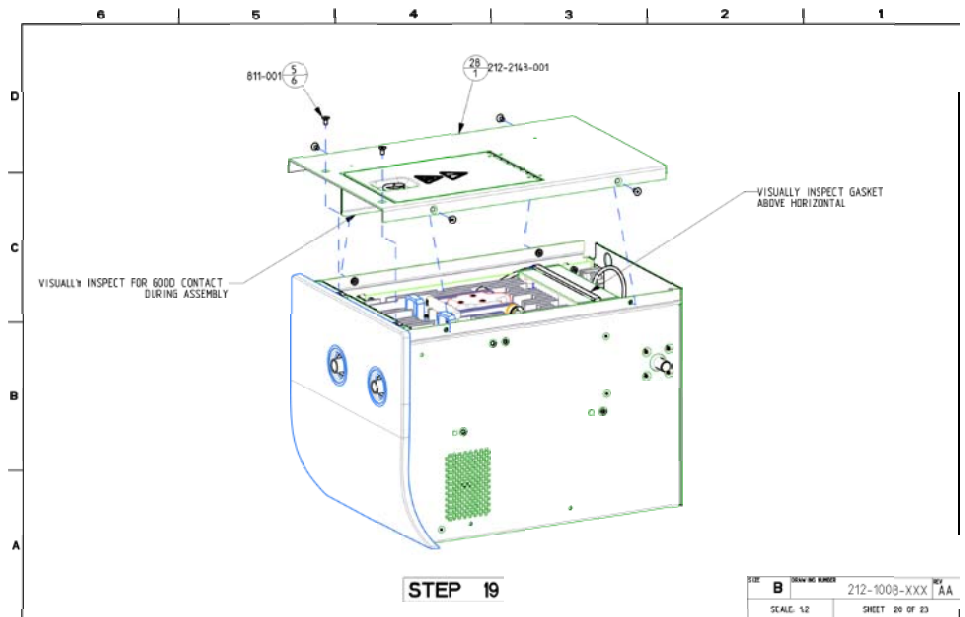
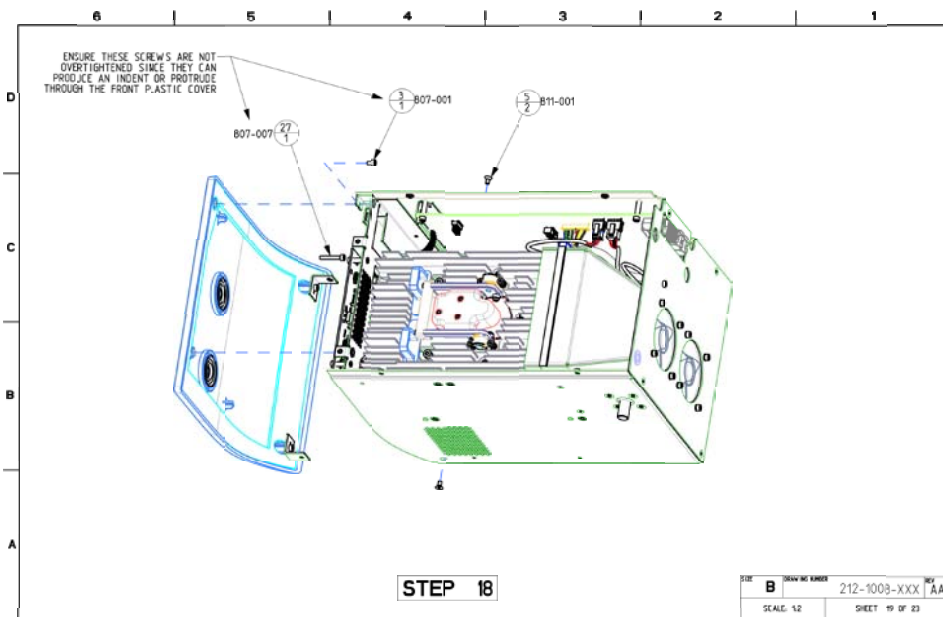
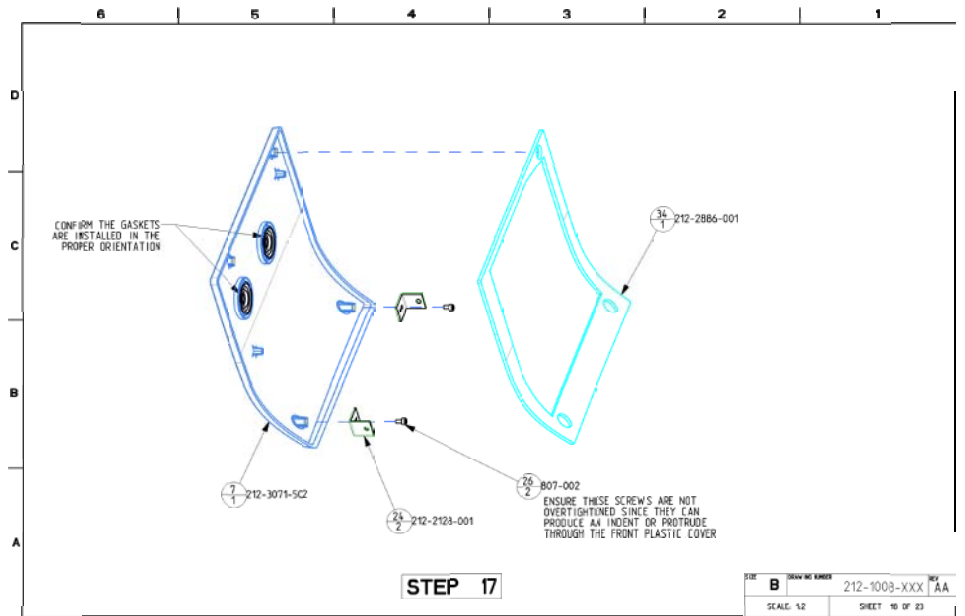
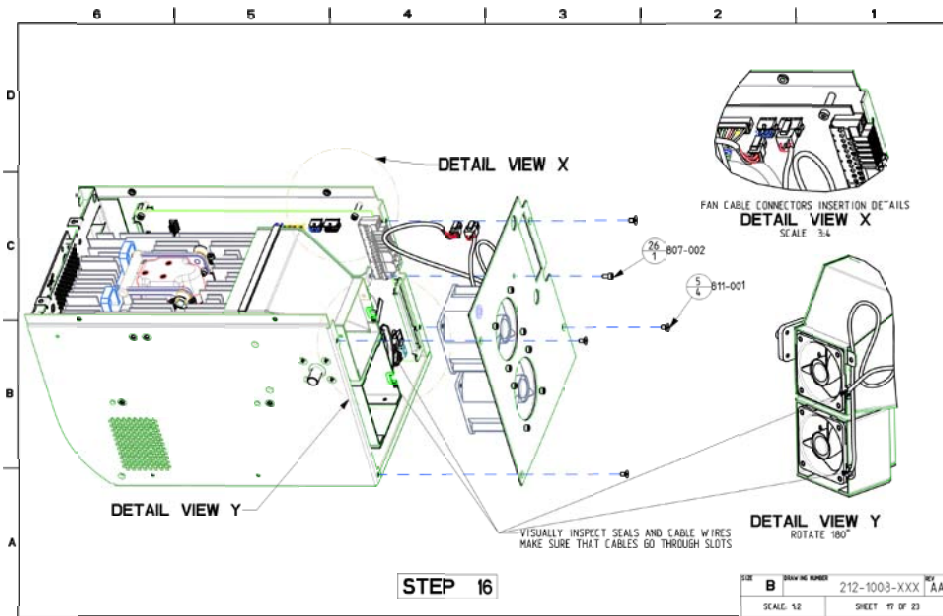
STEP 3

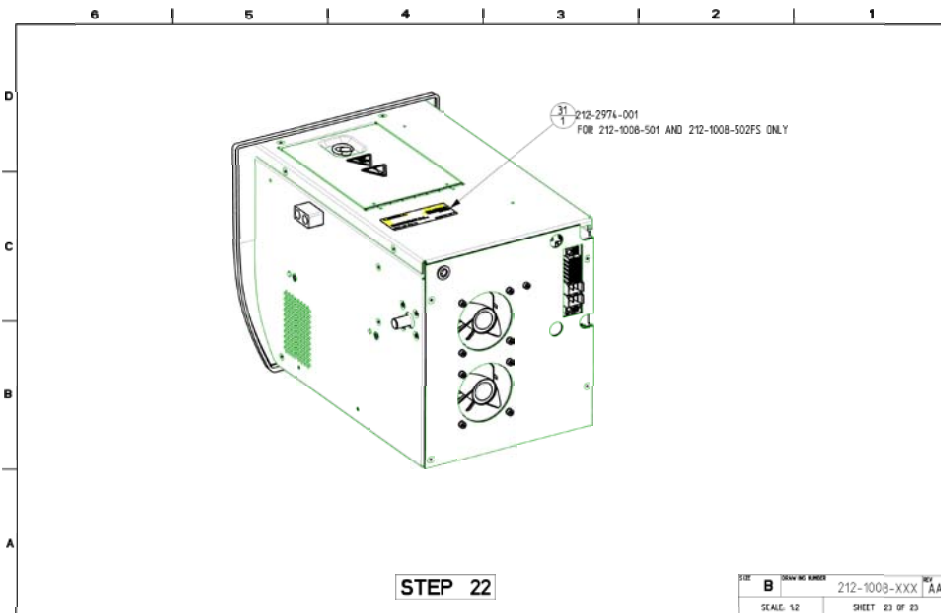
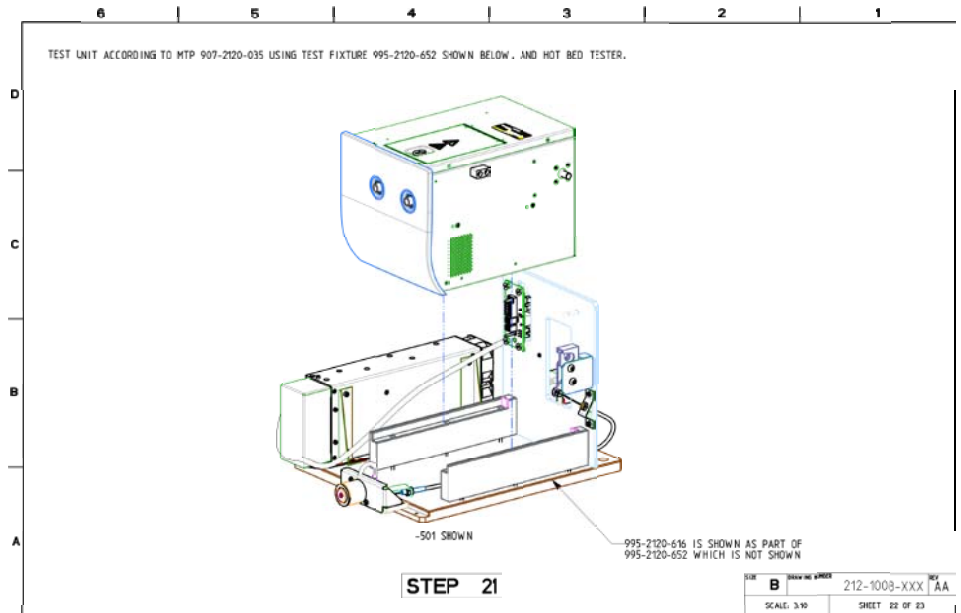
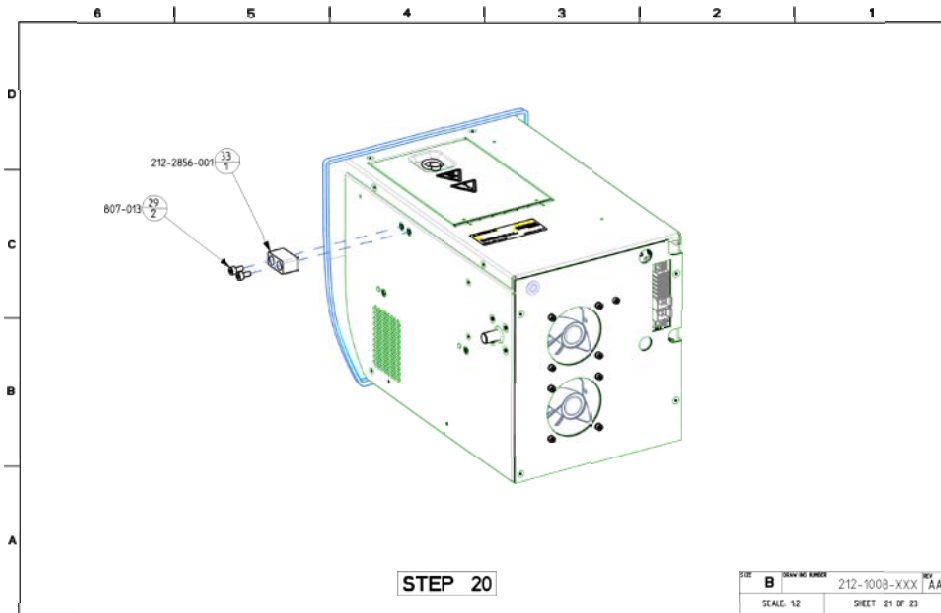
SIZE B DRAWING NUMBER 212-1008-XXX REV AA
SCALE: 1:2 SHEET 4 OF 23











212-2150-501 ASSY, BALLAST, AUX ILLUMINATOR

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2980-002	BALLAST,24V,AUX ILLUMINATOR	1
002	212-2603-001	PLUG,BANANA,,125 4-40X.480L	2
003	212-2719-001	PLUG,OUTPUT,BALLAST	1
004	212-2867-001	GASKET,DUCT,BALLAST AUX ILLUM	1
005	212-2655-001	CABLE ASSY,BALLAST INTFC	1
006	212-2657-002	CABLE,FLEX CIRCUIT,W27	1
007	212-2066-001	CHASSIS,BALLAST,AUX ILLUM	1
008	212-2488-001	PLATE,REAR,BALLAST AUX ILLUM	1
009	775-033	GASKET,EMI,15P D-CONN	1
010	775-034	GASKET,EMI,25 PIN D CONN	1
011	816-308	STANDOFF,M/F,M3X.05X4.5MM SST	4
012	811-001	SCREW,FLAT HD SKT,M3X6 SST	4
014	891-032	LUBRICANT,COND GRS,SILICONE	AR

AR = As Required

NOTES: UNLESS OTHERWISE SPECIFIED

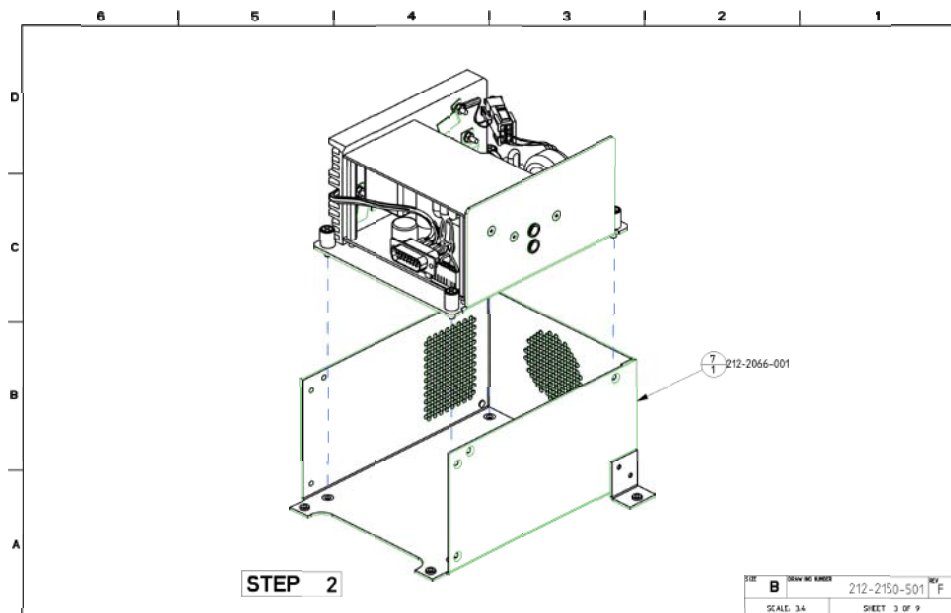
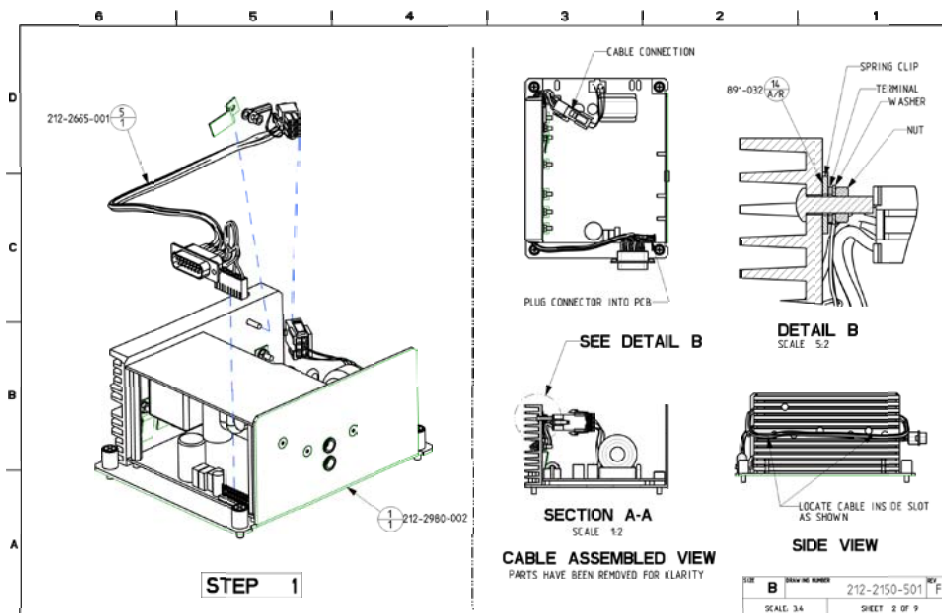
1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-006.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. ASSEMBLE PER MAP 902-2120-042. TEST PER MTP 907-2120-035.

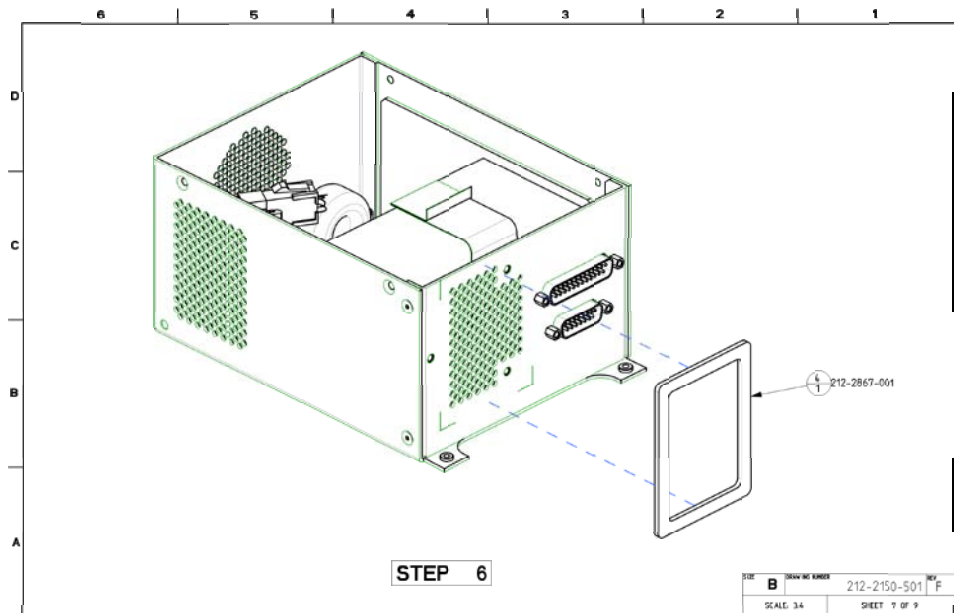
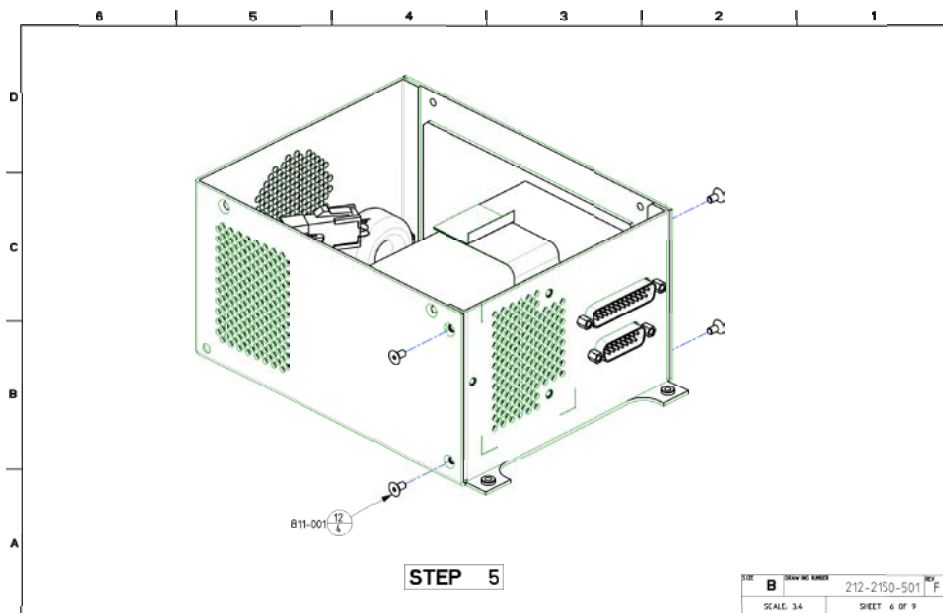
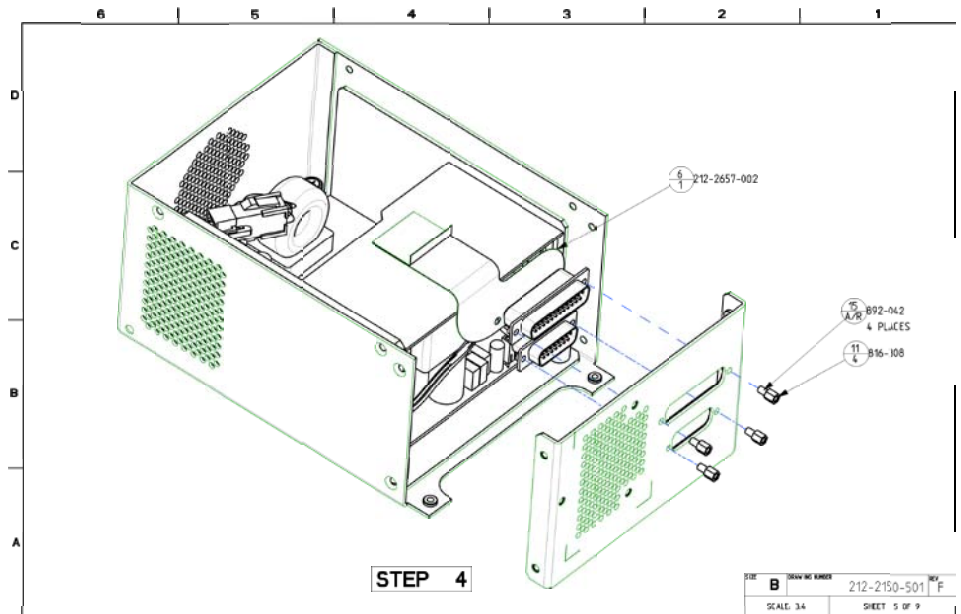
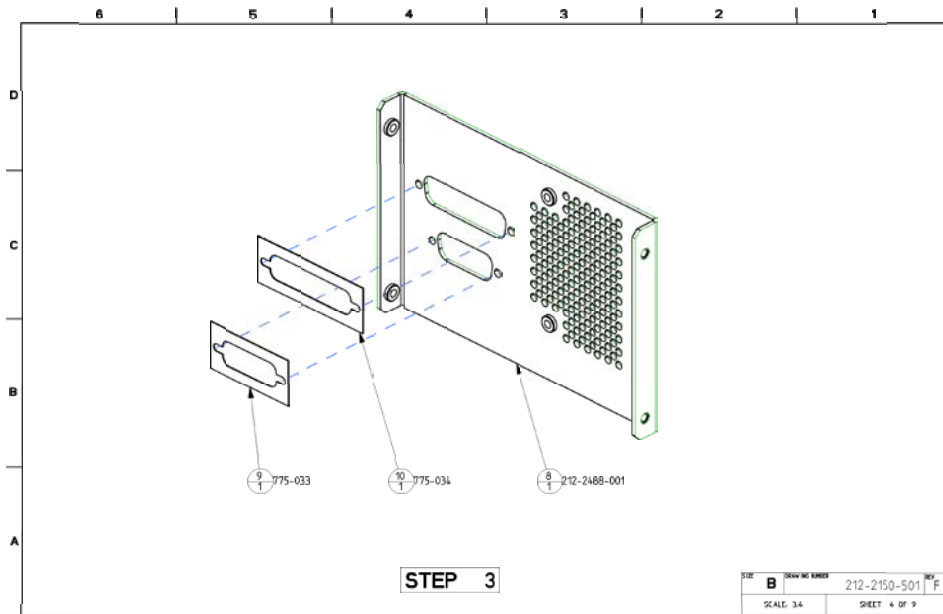
REVISION HISTORY

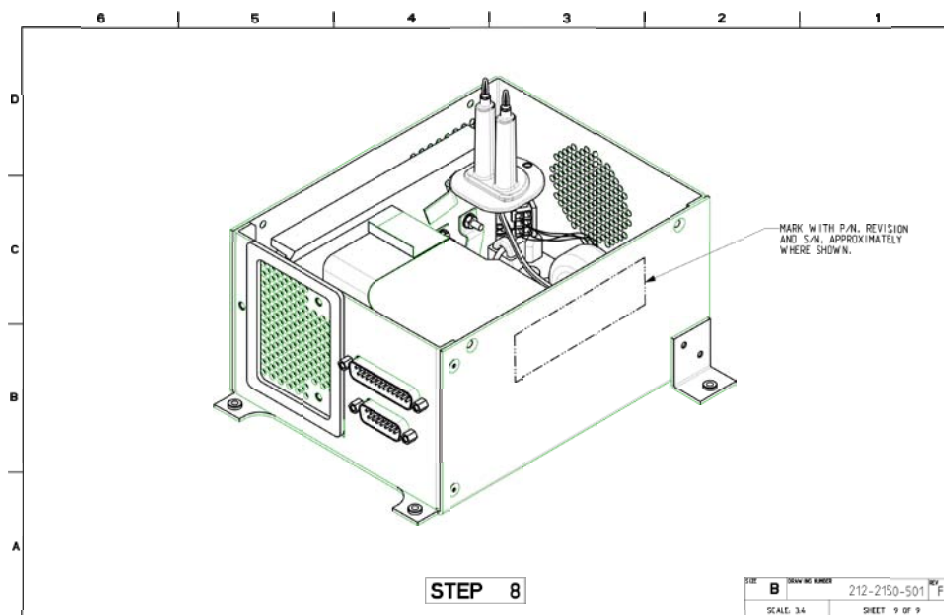
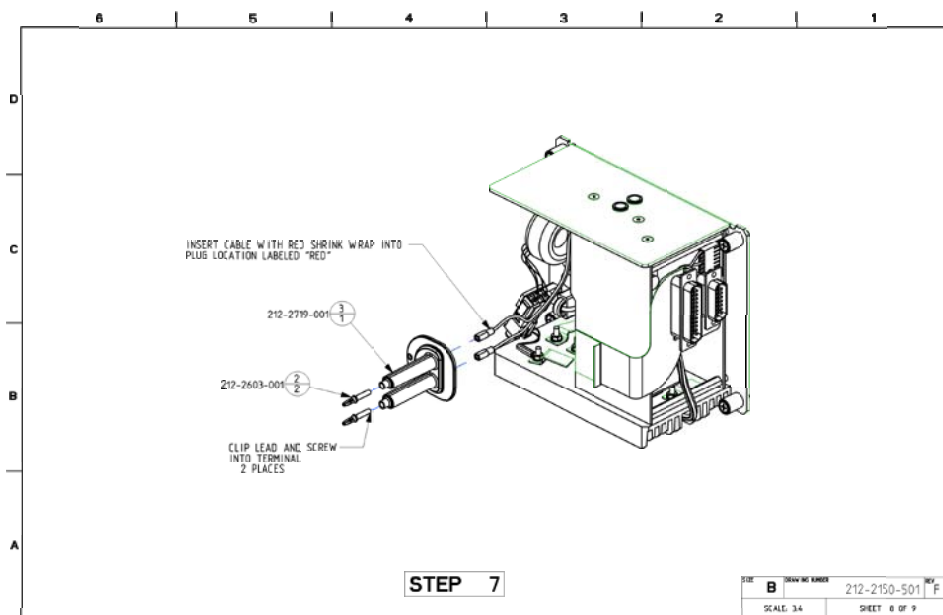
REV	ECN	DATE
P18	NOT RELEASED	03/06/08
A	20000757	03/10/08
B	20081344	05/20/08
C	20081673	06/30/08
D	20101155	07/30/10
E	CN051961ECN	01/22/14
F	CN055745ECN	05/30/14

SEE SEPARATE PARTS LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY A.FERMIN DATE 08/22/06		THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.		
CHECKED T. NGUYEN DATE 08/22/06		Alcon Irvine, California 92618		
APPROVED M.MARTIN DATE 08/22/06		DRAWING NUMBER 212-2150-501 REV F		
FORMED REVISION 2/23/2007		SCALE: 3:4 SHEET 1 OF 9		
PDM LINK MODEL ATTRIBUTES NAME: 212-2150-501.PROC		VERSION: F.2		







212-2164-501 ASSY, POWER DIST, CART

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1967-001	FRAME,BASE,POWER DIST	1
002	212-2536-001	POWER SUPPLY,24V,BASE	1
003	809-006	SCREW,BTN HD SKT,M4X8 SST	4
004	809-001	SCREW,BTN HD SKT,M3X6 SST	4
005	212-1512-551	ASSY,PCB,BASE POWER DISTR	1
006	212-2221-001	CABLE ASSY,MODULE,POWER AC W15	1
007	212-2220-002	CABLE ASSY,W40,DC POWER BLACK	1
008	212-2220-001	CABLE,W14,DC POWER	1
009	212-2222-001	CABLE,W16,P/S CONTROL	1
010	212-2223-001	CABLE ASSY,GROUND,W17	1
011	767-102	NUT,HEX,10-32X.361X.114 CS	2
012	797-005	WASHER,INT LOCK.20X.38X.03 ZNC	2
013	892-042	ADHESIVE,THREADLOCKER,242 BLUE	AR
014	027-003	CABLE TIE,.625X3.50L,NYLON	5

AR = As Required

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. -5XXX SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -5XX SERIES P/N.
5. BUILD PER 992-2120-0-0 AND TEST PER 907-2120-0-0C (TEST APPLIES TO -501S ONLY).

REVISION HISTORY

REV	ECN	DATE
P18	NOT RELEASED	03/06/08
A	20080767	03/11/08
B	20082000	08/05/08
C	20100266	03/03/10
D	20100935	06/23/10
E	CN053335ECN	03/05/14
F	CN053903ECN	03/20/14

TABULATION BLOCK

PART NUMBER	REV.	DESCRIPTION	PART NUMBER	DESCRIPTION
212-2164-501	F	ASSY,POWER DISTRIBUTION,CART	212-2164-501S	ASSY,POWER DISTR,CART SERVICE

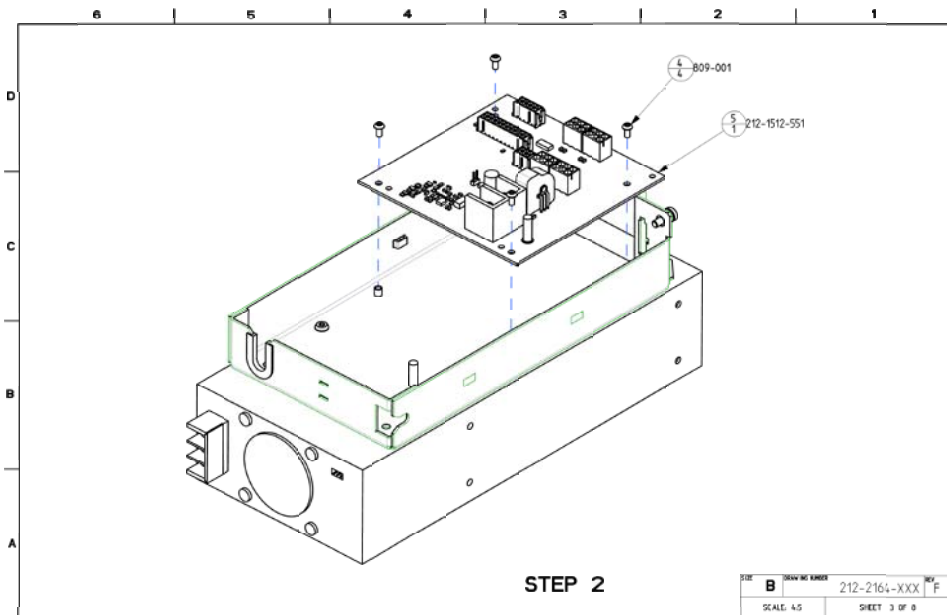
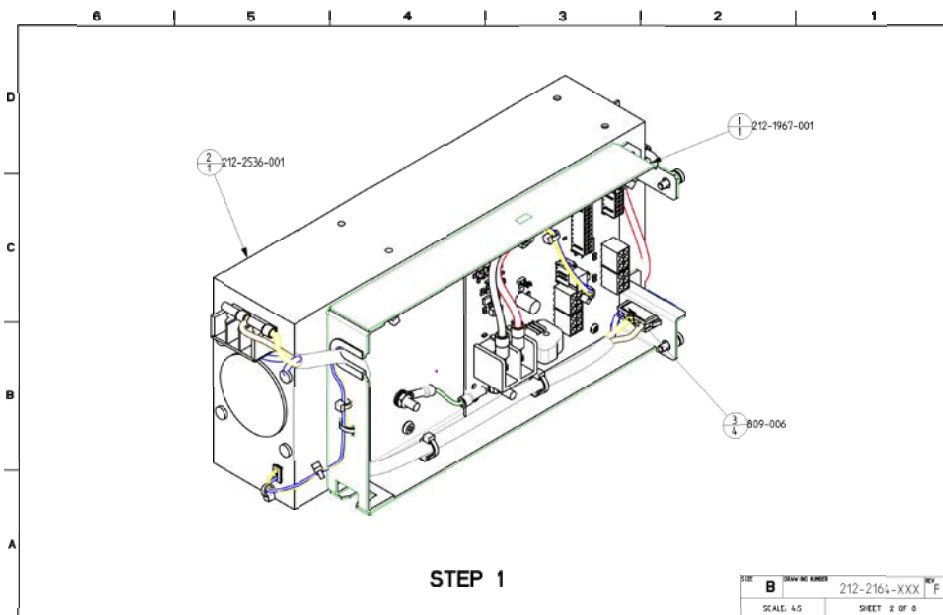
SEE SEPARATE PART LIST

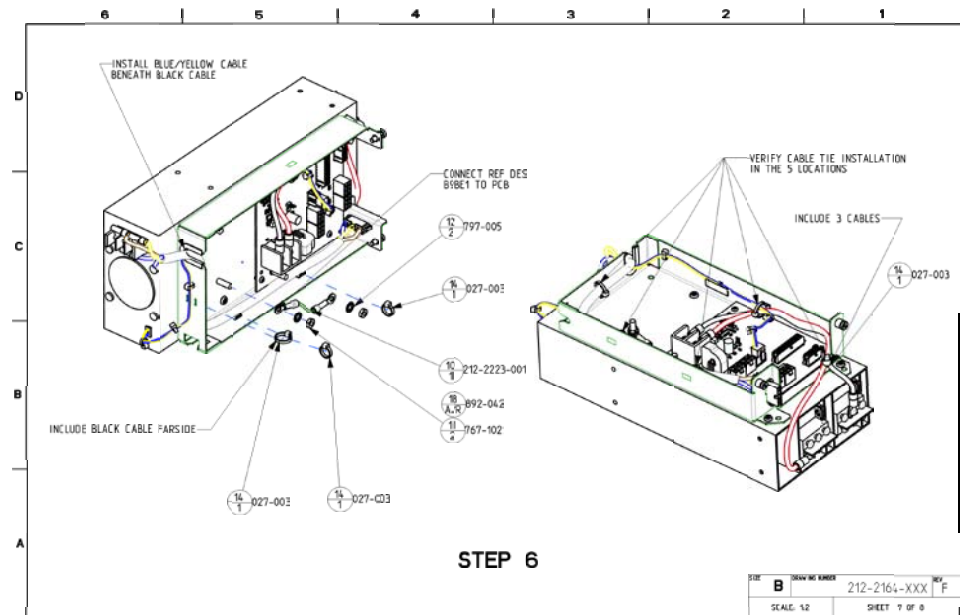
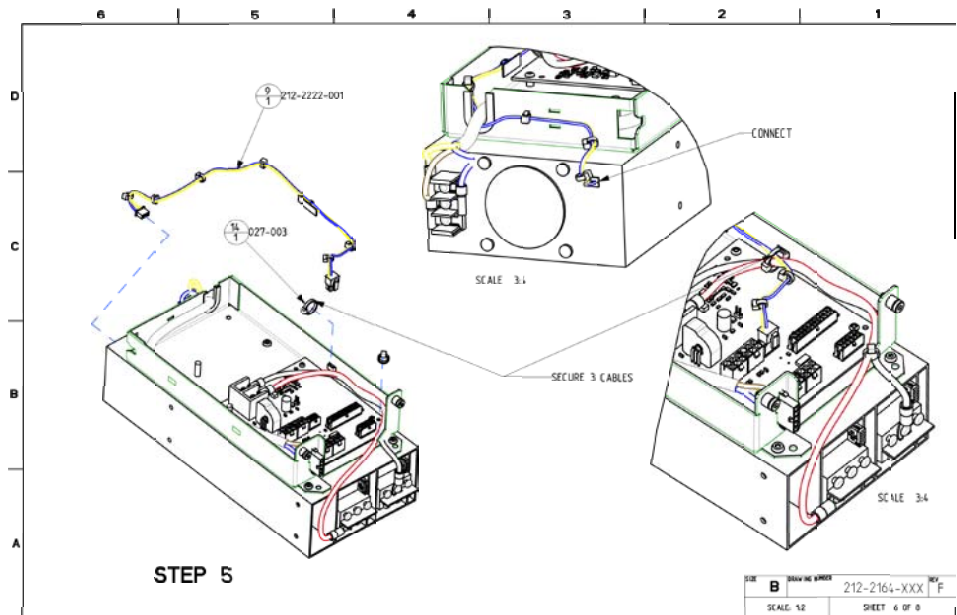
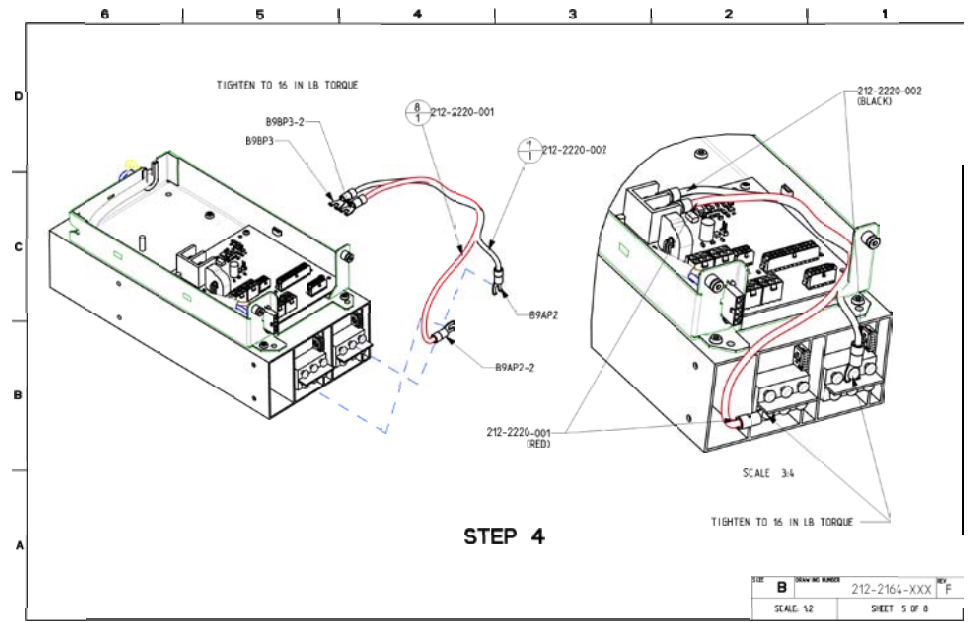
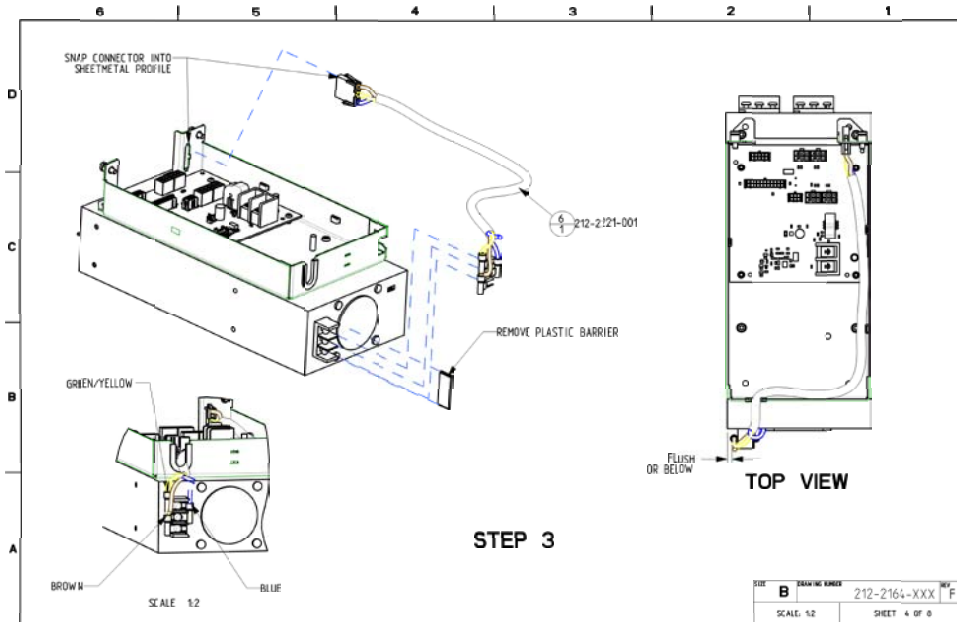
QTY	PART NUMBER	DESCRIPTION	MATERIAL/MAUFACTURER	ITEM
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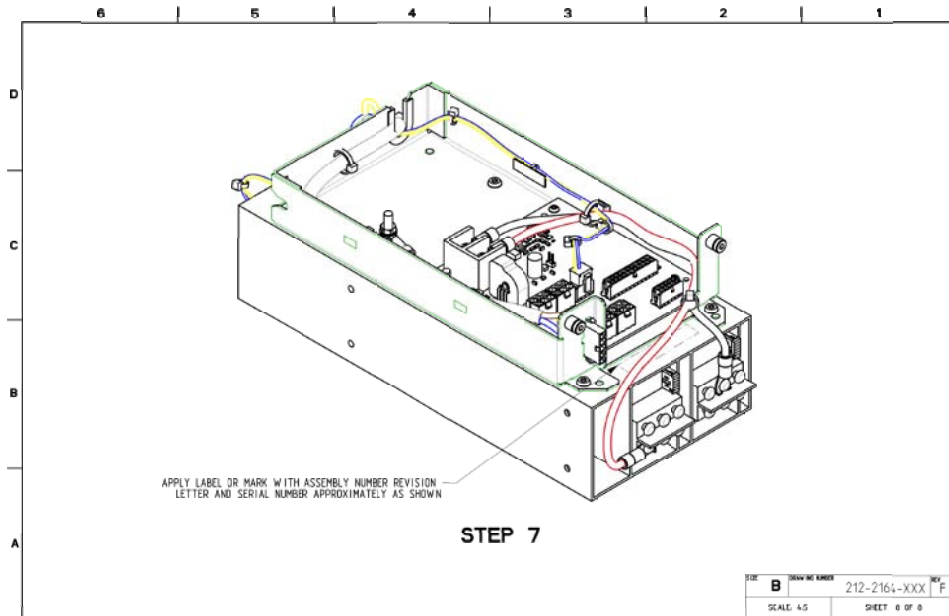
BILL OF MATERIAL

BY J. ATHERLEY	DATE 06/15/06	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.	 Irvine, California 92618	DESCRIPTION ASSY,POWER DISTRIBUTION,CART
DESIGNED BY J. CHUNG	DATE 02/04/08			SHEET B DRAWING NUMBER 212-2164-XXXX REV F
APPROVED BY M. KOSMULA	DATE 04/02/08			SCALE: 3:5 SHEET 1 OF 8
FORMED REVISION 2/23/2007				VERSION: F.1

POME LINK MODEL ATTRIBUTES NAME: 212-2164-501.PDOC

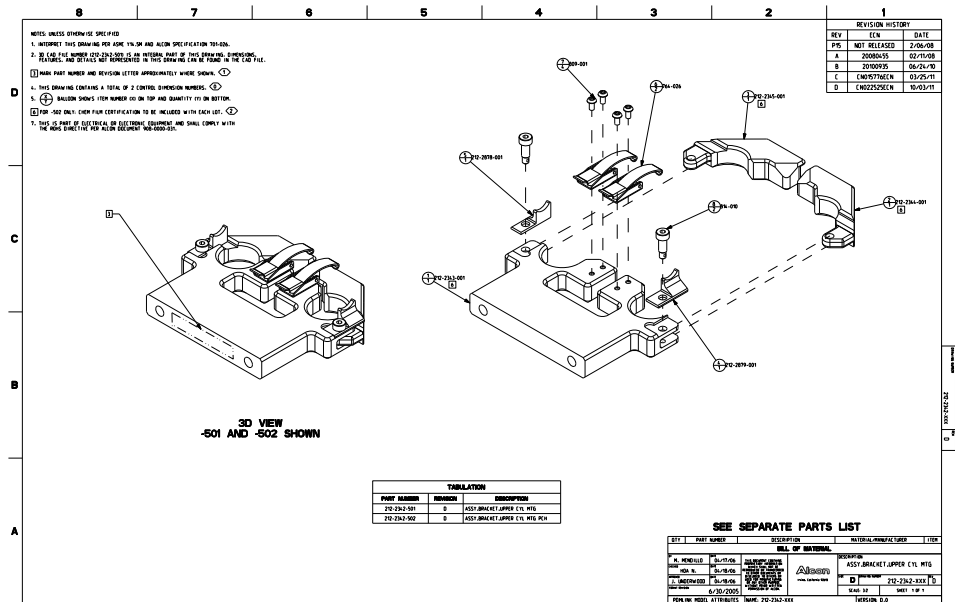






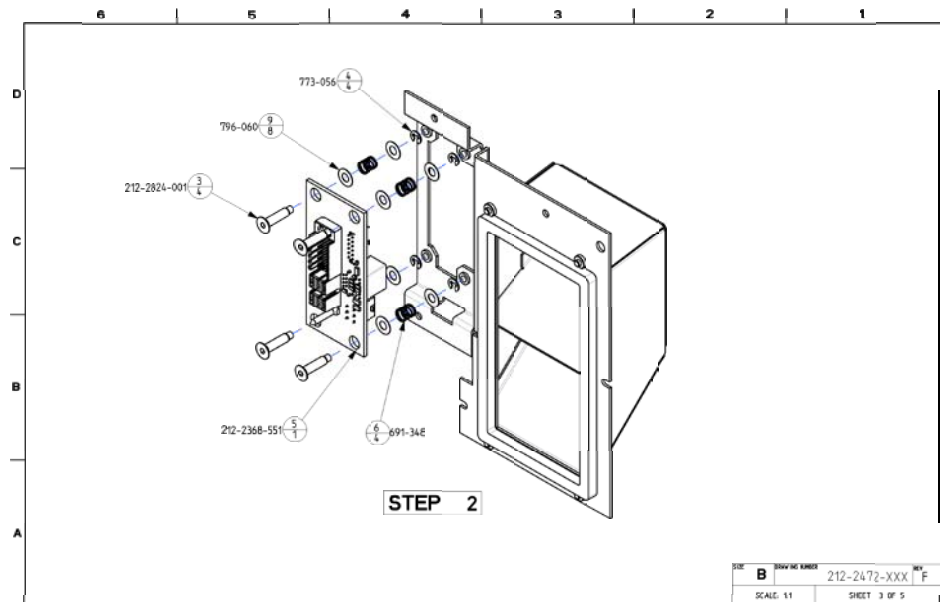
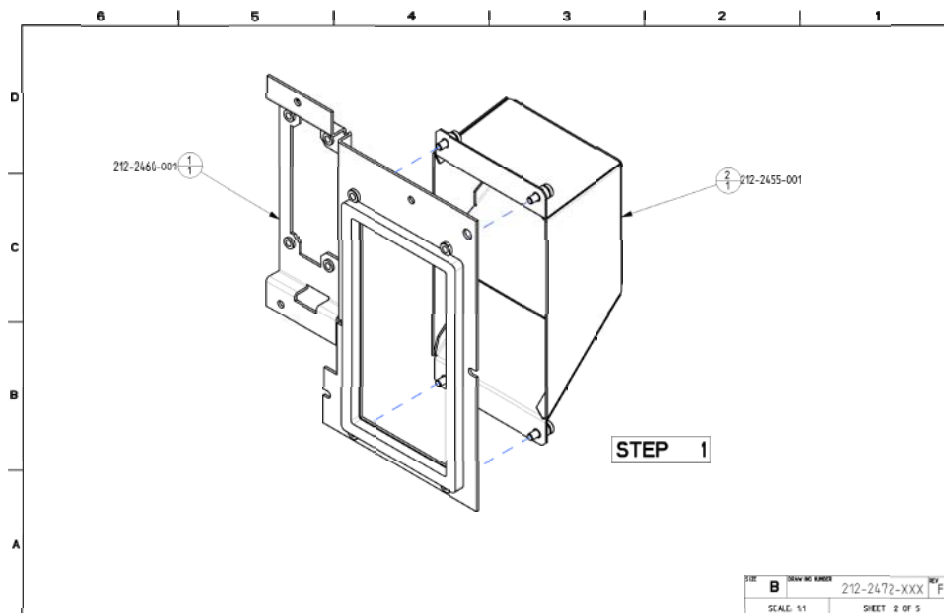
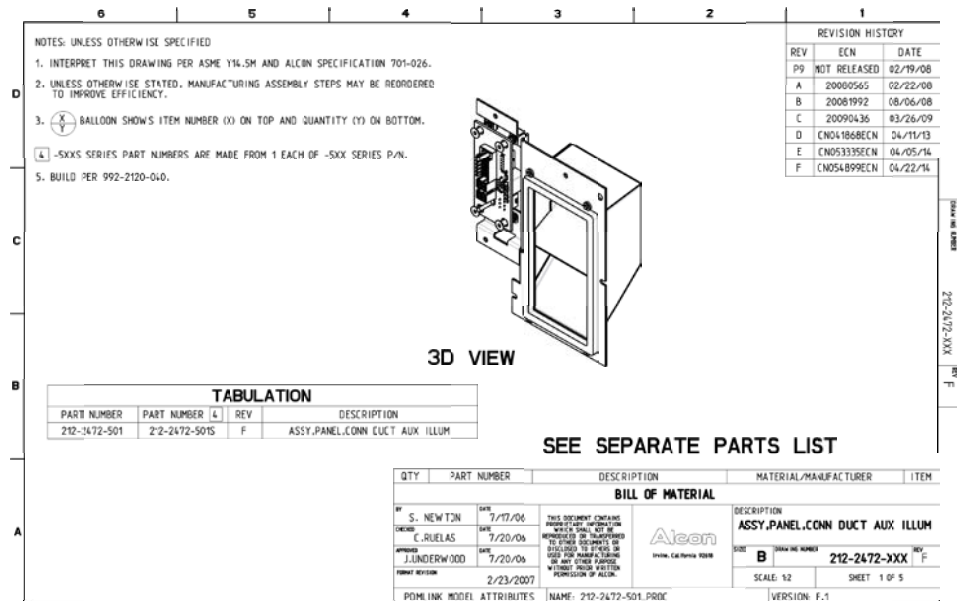
212-2342-501 ASSY, BRACKET, UPPER CYL MTG

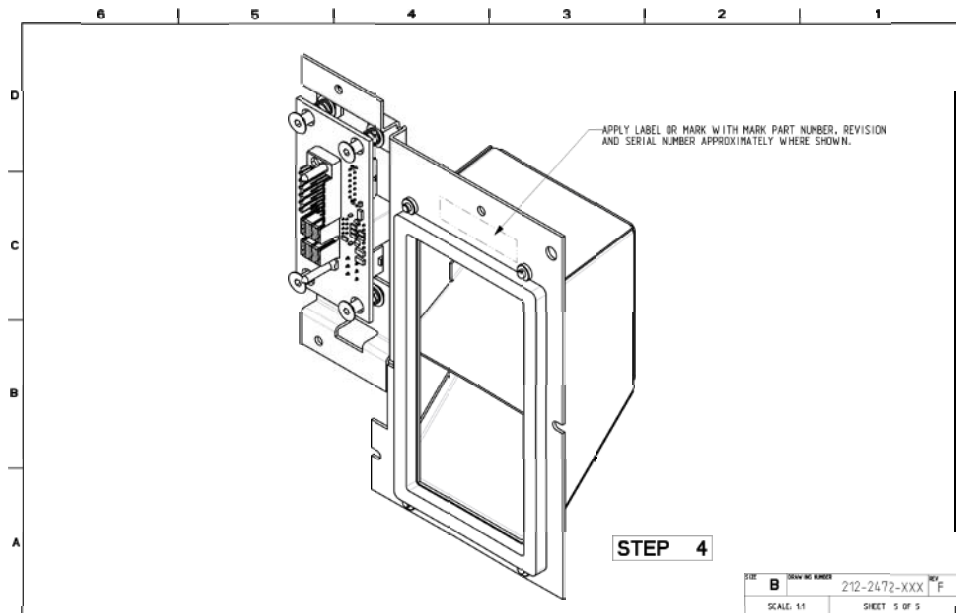
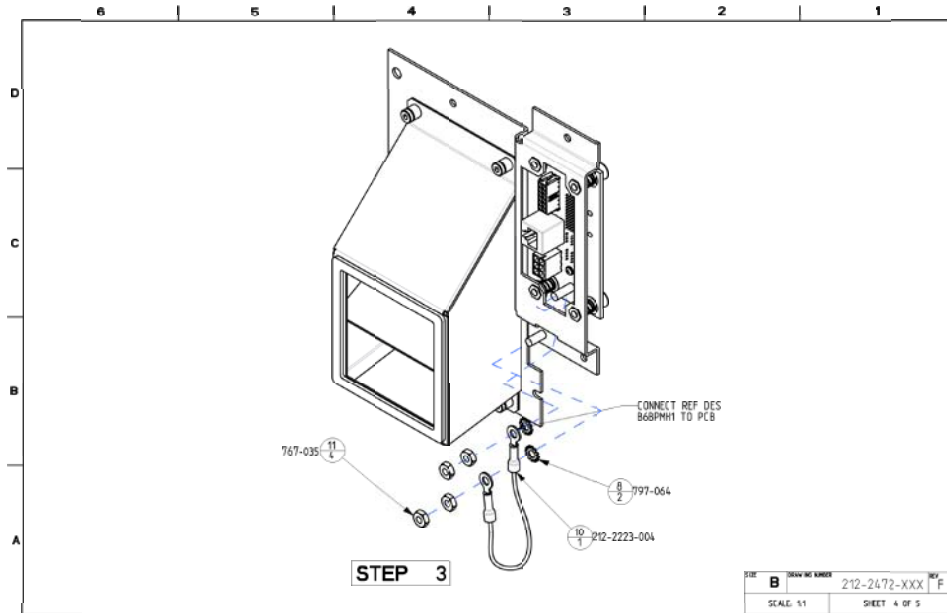
ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-2343-001	BRACKET,BASE,UPPER CYL MTG	1
2	212-2344-001	BRACKET,DOOR,UPPER CYL MTG RH	1
3	212-2345-001	BRACKET,DOOR,UPPER CYL MTG LH	1
4	212-2879-001	BRACKET,HOLDER,UPR CYL MTG LH	1
5	212-2878-001	BRACKET,HOLDER,UPR CYL MTG RH	1
6	764-026	LATCH,DRAWER,OVER-CENTER SST	2
7	809-001	SCREW,BTN HD SKT,M3X6 SST	4
8	814-010	SCREW,SHLDR,SKT HD M4X10.013	2



212-2472-501 ASSY, PANEL, CONN DUCT ILLUM

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-2460-001	BRACKET,BULKHEAD,AUX ILLUM	1
002	212-2455-001	DUCT,INNER,AUX ILLUM	1
003	212-2824-001	BOLT,FL HD,SHOULDER,M4X16	4
004	773-056	RING,RETAINING,EXT .172 SHAFT	4
005	212-2368-551	ASSY,PCB,AUX ILLUM FLOATING	1
006	691-348	SPRING,COMP.,312ODX1.25L MW	4
008	797-064	WASHER,EXT LOCK.20X.41X.03 SST	2
009	796-060	WASHER,FLAT.,209X.438X.010 SST	8
010	212-2223-004	CABLE ASSY,GROUND,W36	1
011	767-035	NUT,HEX,10-32X.398X.130 SST	4





212-2715-501 ASSY, ACTUATOR, LATCH ILLUM

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	212-2189-001	GUIDE,ACTUATOR,LATCH ILLUM	1
3	212-2188-001	BRACKET,ACTUATOR,LATCH ILLUM	1
4	773-111	RING,RETAINING,EXT .75 SHAFT	1
6	212-2190-002	BUTTON,ACTUATOR,LATCH ILL LEFT	1
9	212-2192-001	LEVER,ACTUATOR,LATCH ILLUM	1
12	212-2586-001	CABLE ASSY,ILLUM,BASE UNIT	1
13	800-103	WASHER,EXT LOCK,M3 SST	2
14	800-003	WASHER,SPLITLOCK,M3 SST	2
15	803-003	NUT,HEX,M3X.5 SST	1
16	809-116	SCREW,BTN HD SKT,M3X5 ND SST	1
17	212-2957-001	CABLE ASSY,GND,AUX ILLUM EJCTR	1
18	798-339	WASHER,SHLDR,NO.6 SST	1
19	807-013	SCREW,CAP HD SKT,M4X8 SST	1

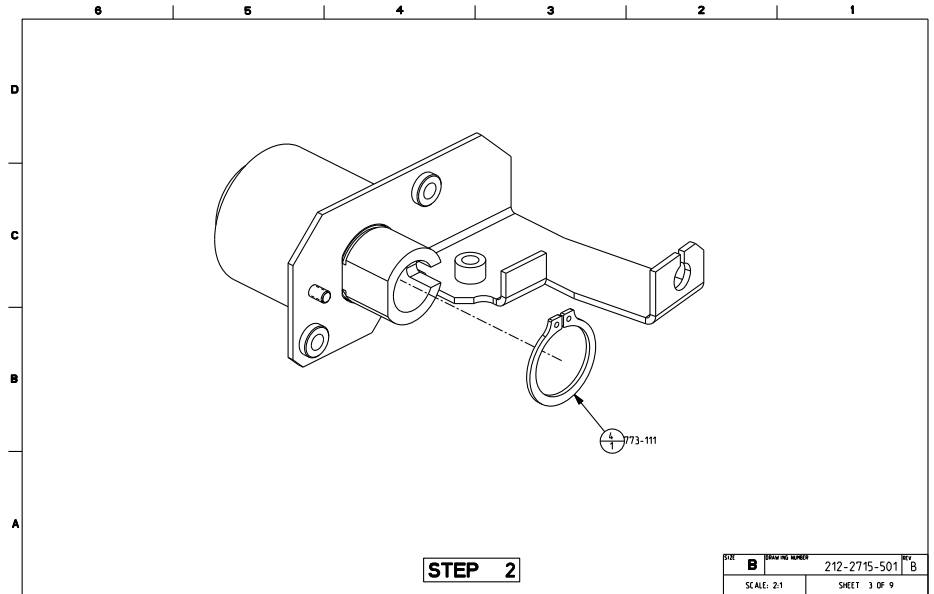
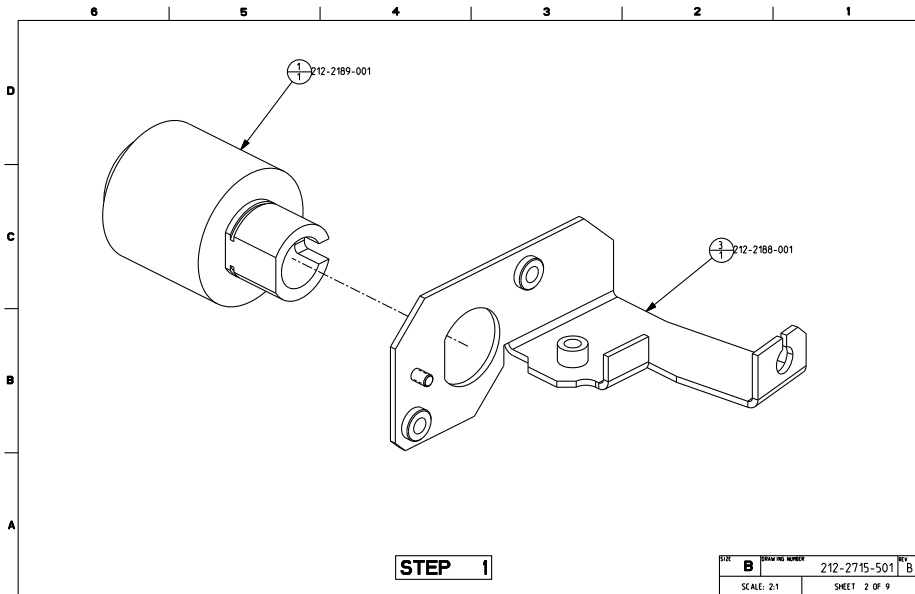
NOTES: UNLESS OTHERWISE SPECIFIED

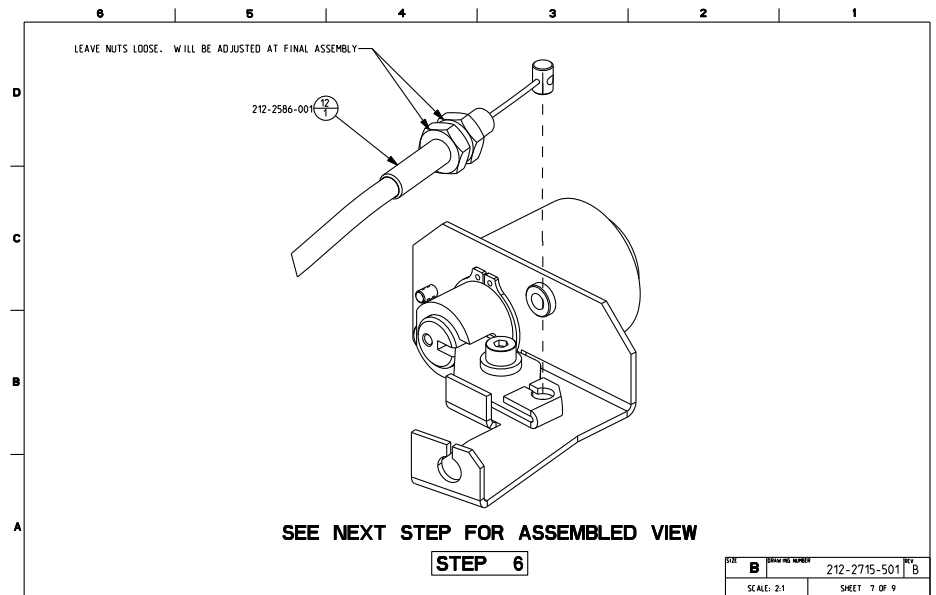
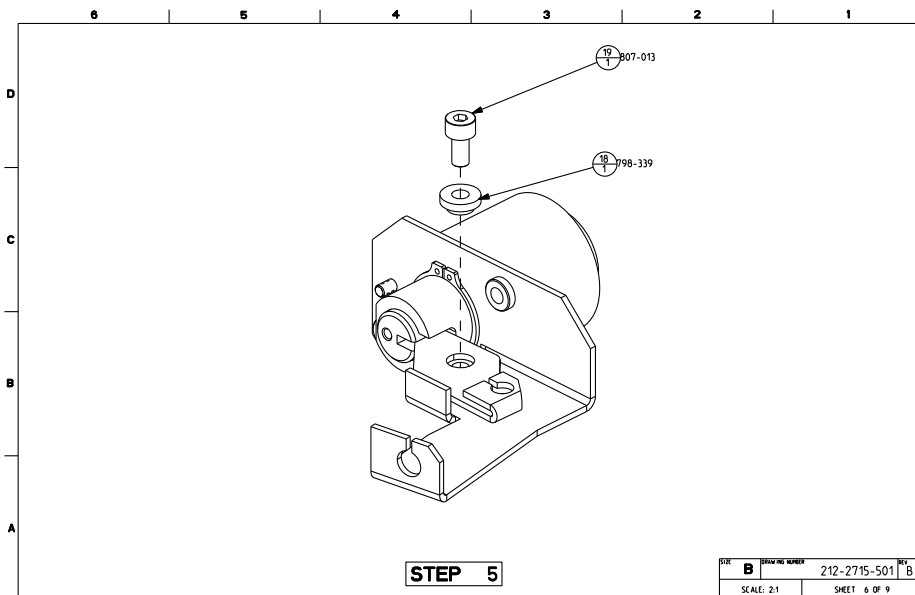
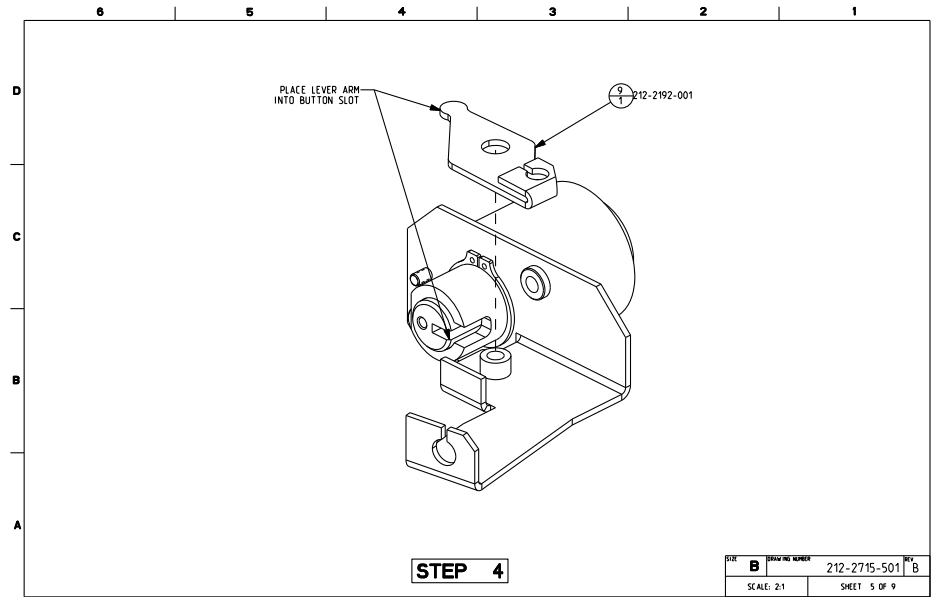
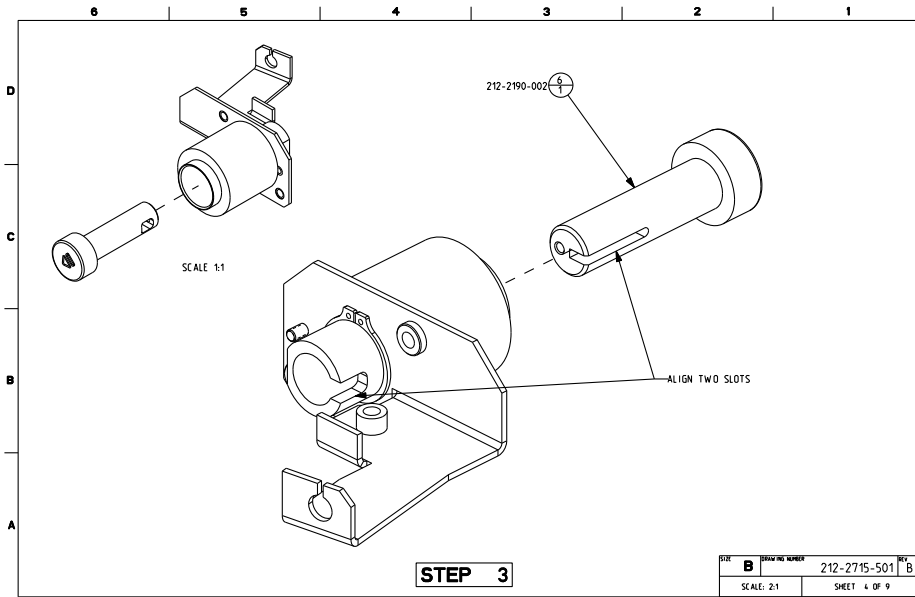
1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. BUILD PER 992-2120-040

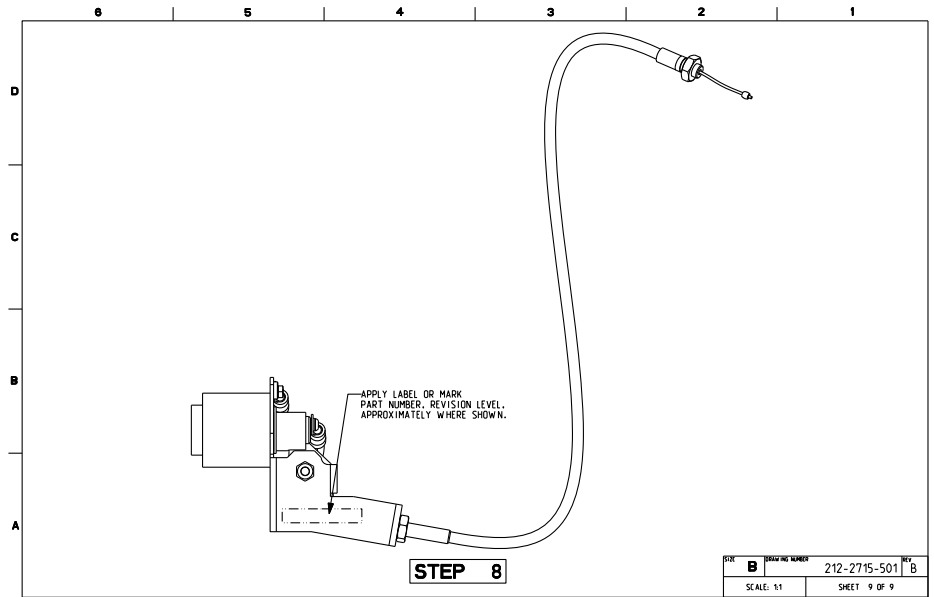
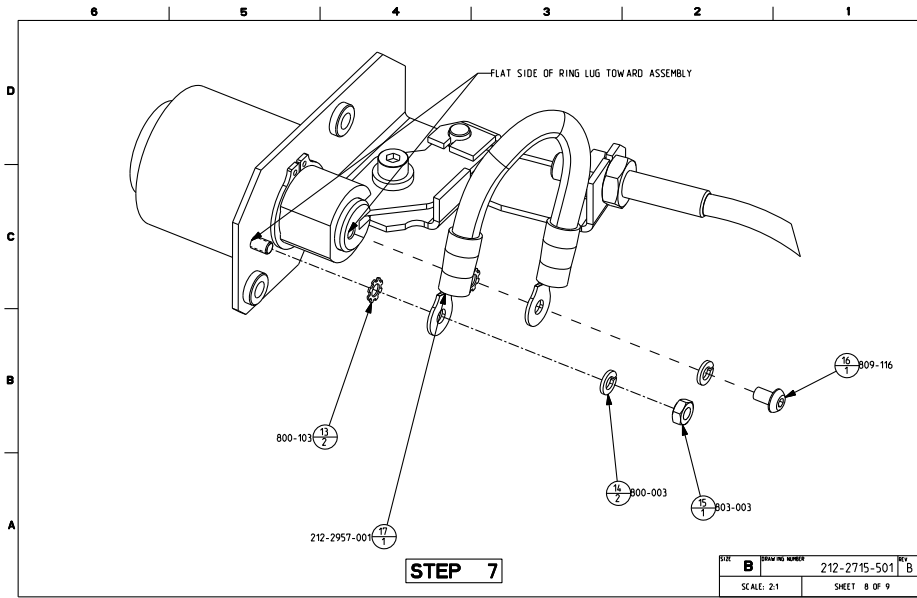
3D VIEW
SCALE 1:1

SEE SEPARATE PART LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY J. ATHERLEY	DATE 11/29/06	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF ALCON.		DESCRIPTION ASSY,ACTUATOR,LATCH ILLUM
CHECKED P. NGUYEN	DATE 11/29/06	ALCON		SCALE: 2:1
APPROVED J. UNDERWOOD	DATE 11/29/06	SCALE: 2:1		SHEET 1 OF 9
FORM REVISION 2/23/2007	NAME: 212-2715-501-PROD		VERSION: B.2	
PDM LINK MODEL ATTRIBUTES				








212-1004-501 ASSY, ARM, TRAY

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1191-501	ASSY,ARM,LOWER	1
002	212-1158-501	ASSY,TRAY	1
003	807-030	SCREW,CAP HD SKT,M5X25 SST	8
004	212-1186-501	ASSY,ARM,UPPER	1
005	212-2965-001	CARTON,SHIP,TRAY ARM	1
006	593-043	TAPE,POLYPRO,2.6MIL X 48MM CLR	AR
007	212-2991-001	LABEL,SHIP,TRAY ARM	1
008	212-3019-002	LABEL,WARNING,TRAY ARM IEC	1
009	592-018	LABEL,WARNING,SERV REP 7.0X9.0	1
010	892-370	ADHESIVE,VIBRA-TITE,RED	AR

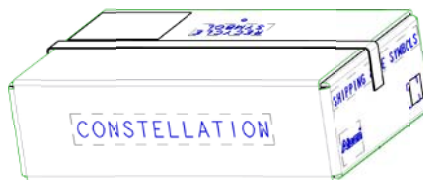
AR = As Required

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3.  BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. -500X SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -50XX SERIES PART.
5. BUILD PER 992-2120-003.

REVISION HISTORY

REV	ECN	DATE
E	20082078	08/14/08
F	20082665	10/27/08
G	20082980	12/5/08
H	20101302	04/26/10
J	EN028864ECN	04/03/12
K	EN052334ECN	03/28/14
L	EN056308ECN	07/17/14



TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-1004-501	ASSY,ARM,TRAY	212-1004-501S	I	ASSY,ARM,TRAY SERVICE
806575139	ASSY,SHIP,ARM TRAY	N/A	I	N/A

SEE SEPARATE PARTS LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MAUFACTURER	ITEM
BY J. ATHERLEY	DATE 08/18/06	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND IS NOT TO BE RELEASED OR DISCLOSED TO OTHERS WITHOUT THE WRITTEN PERMISSION OF ALCON.		
CHANGED BY B. LEE	DATE 03/14/09			
APPROVED BY M. BLIZZEK	DATE 08/18/06			
FORMED HISTORY	2/23/2007			
PDM LINK MODEL ATTRIBUTES	NAME: 212-1004-501.PDOC			

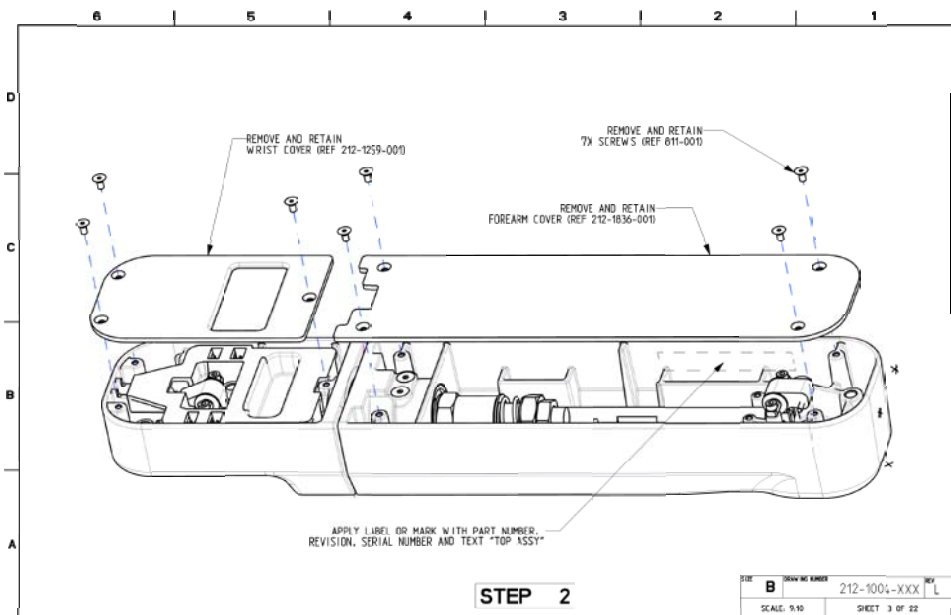
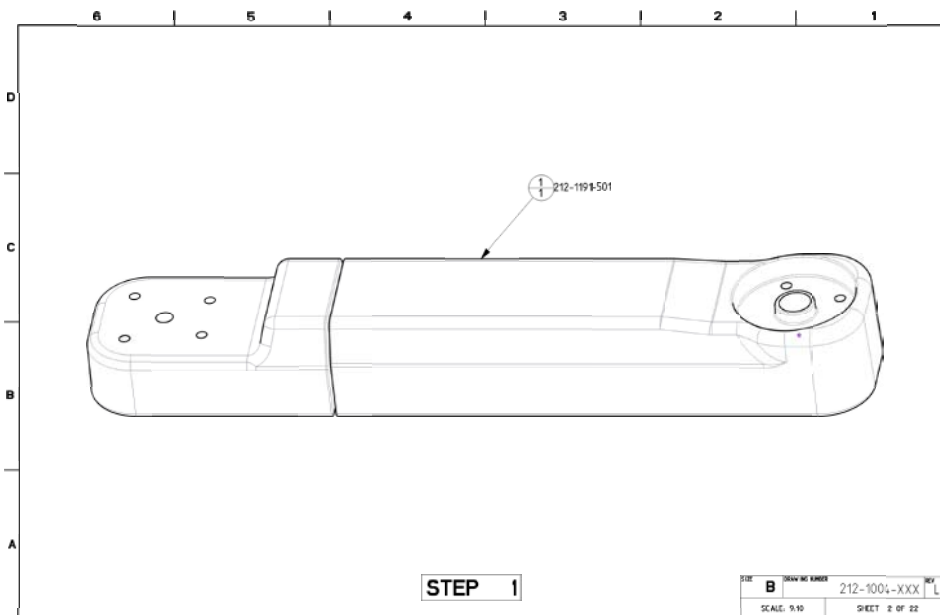
Alcon
Irvine, California 92618

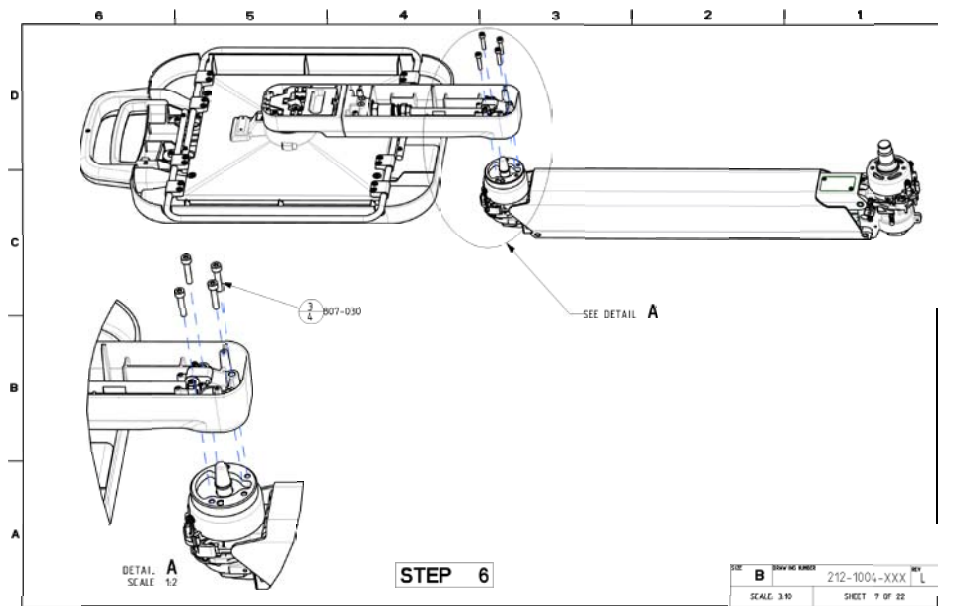
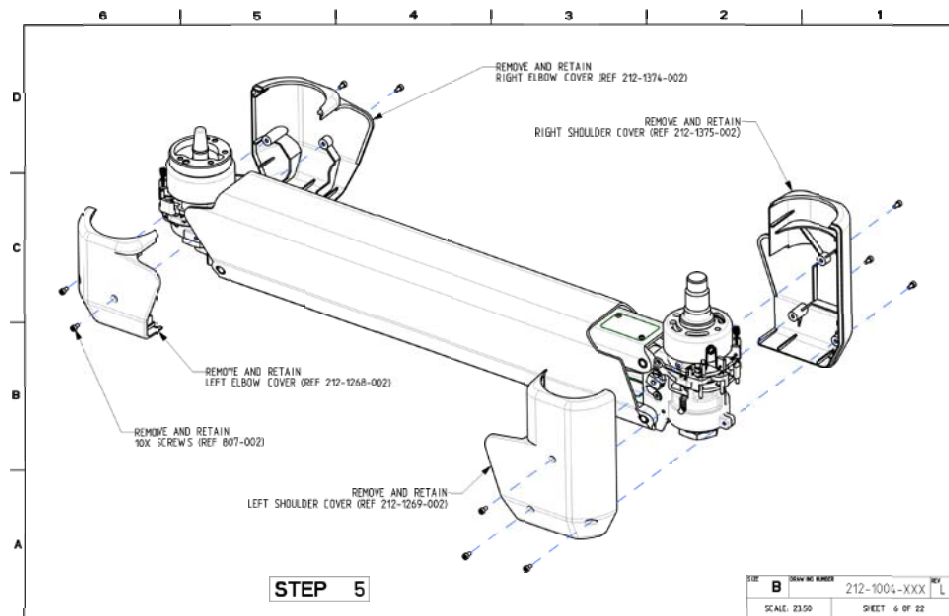
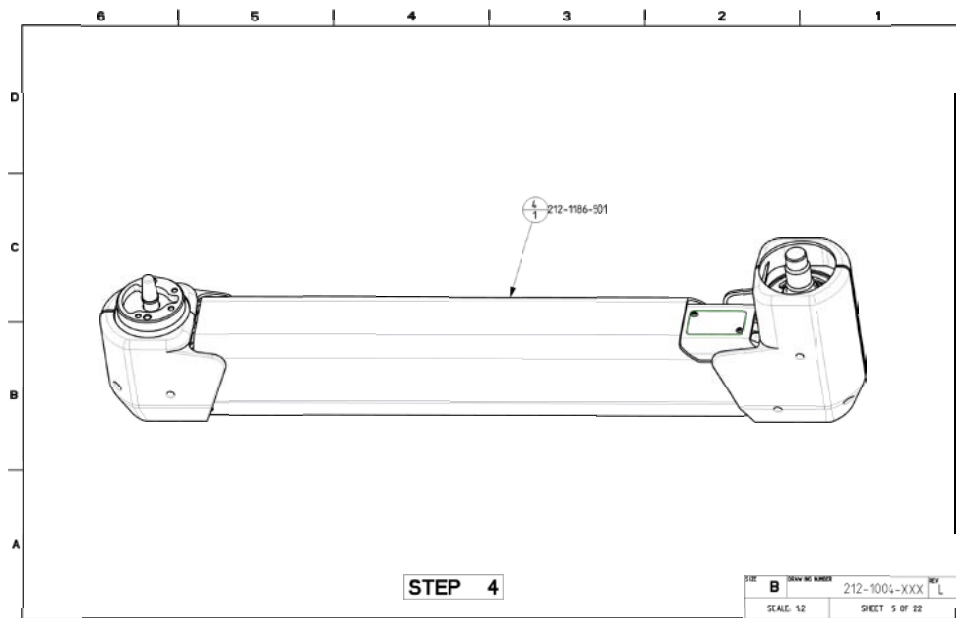
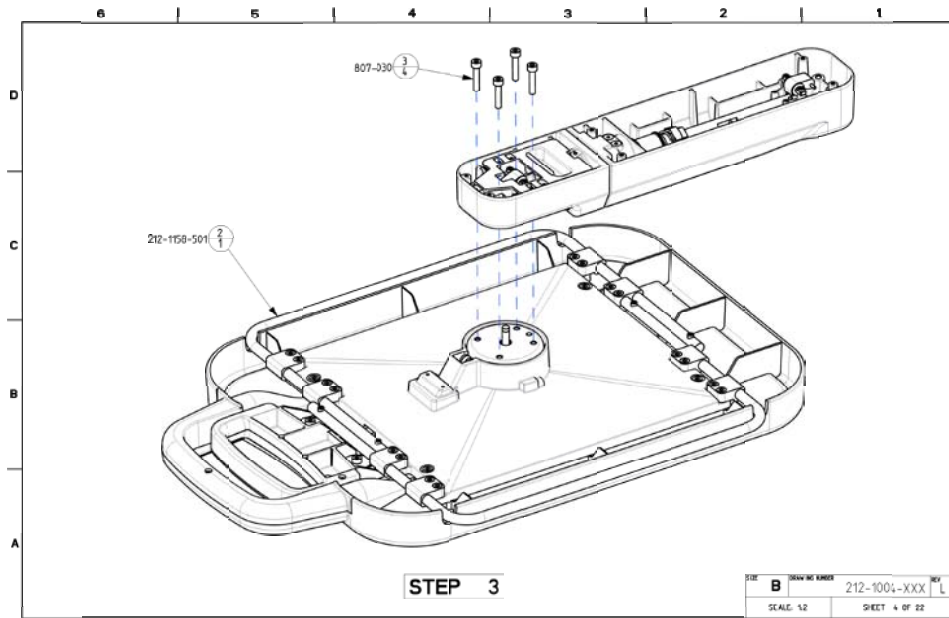
ASSY,SHIP,ARM TRAY

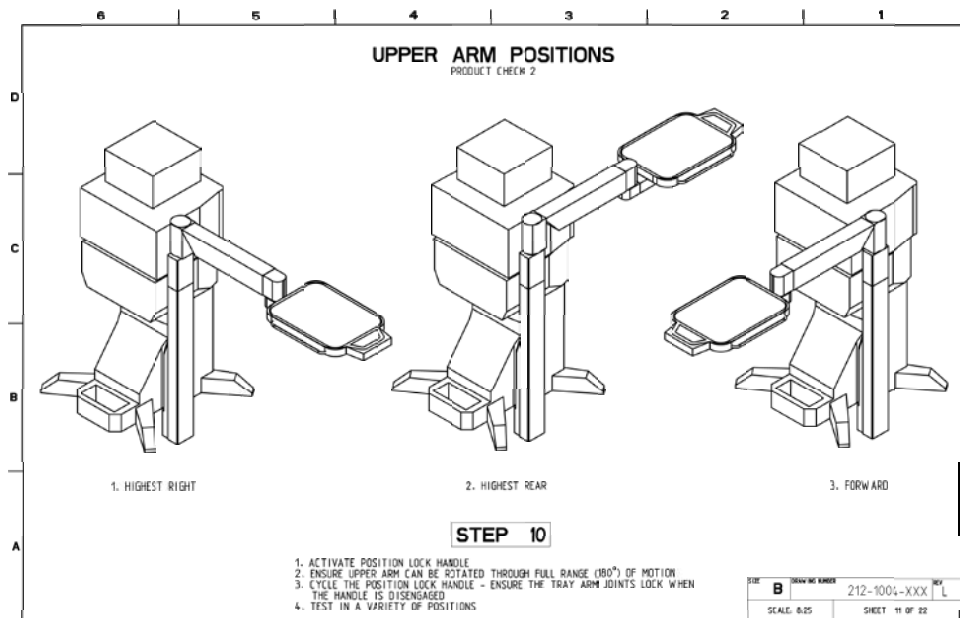
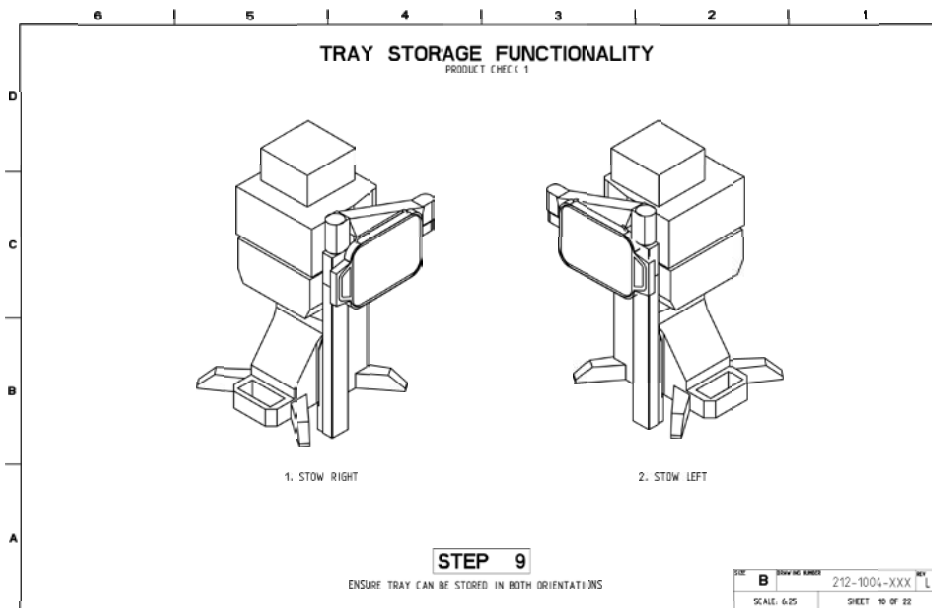
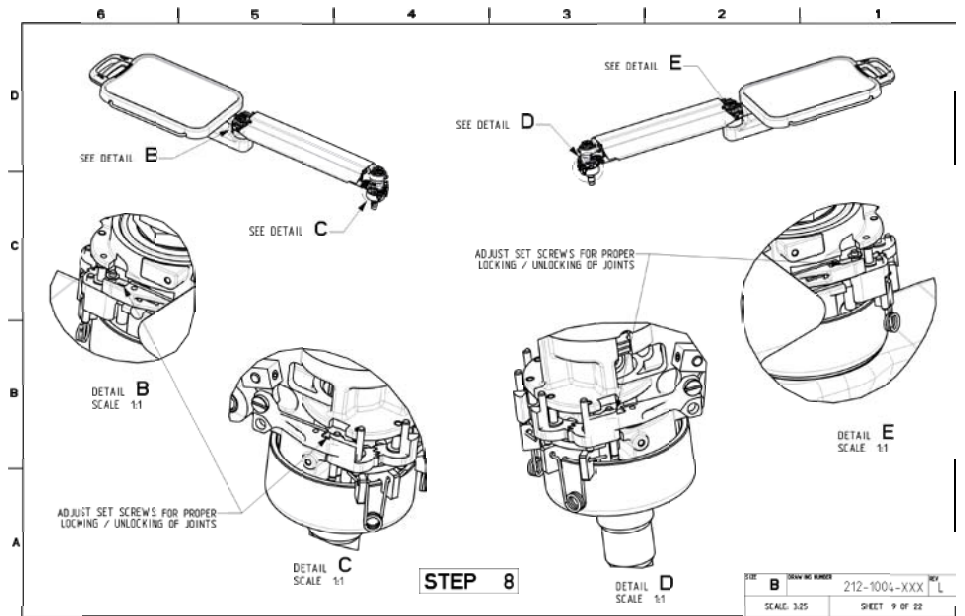
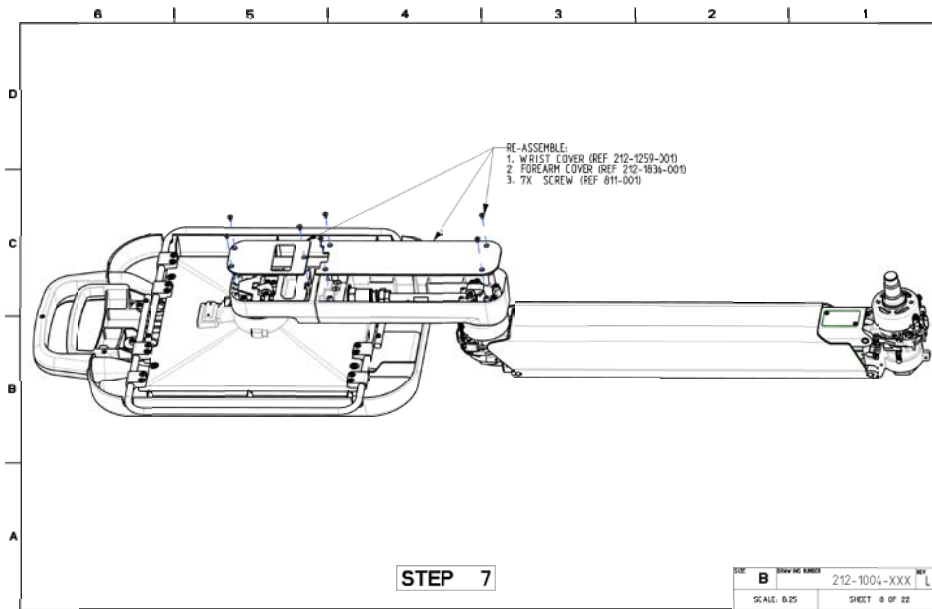
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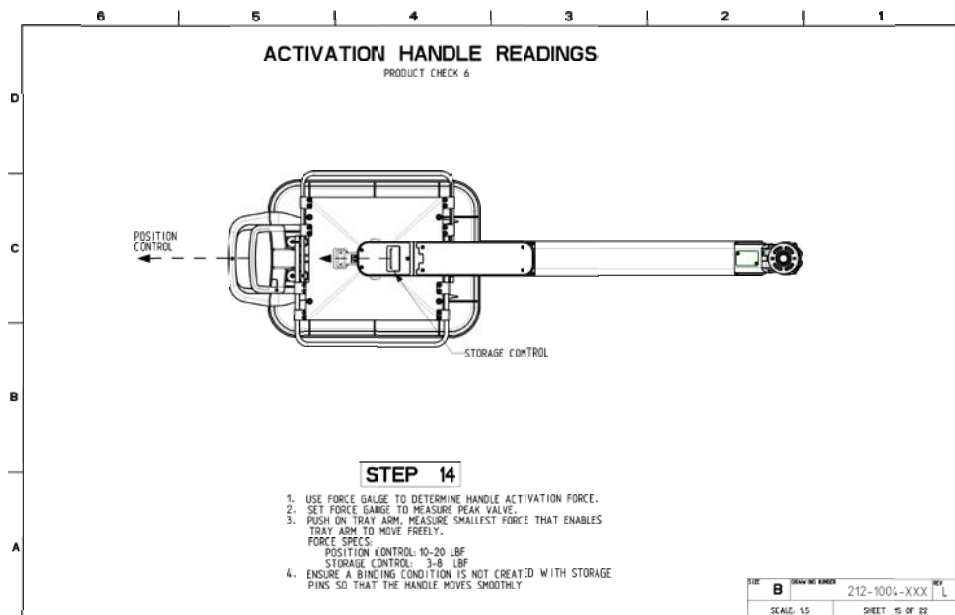
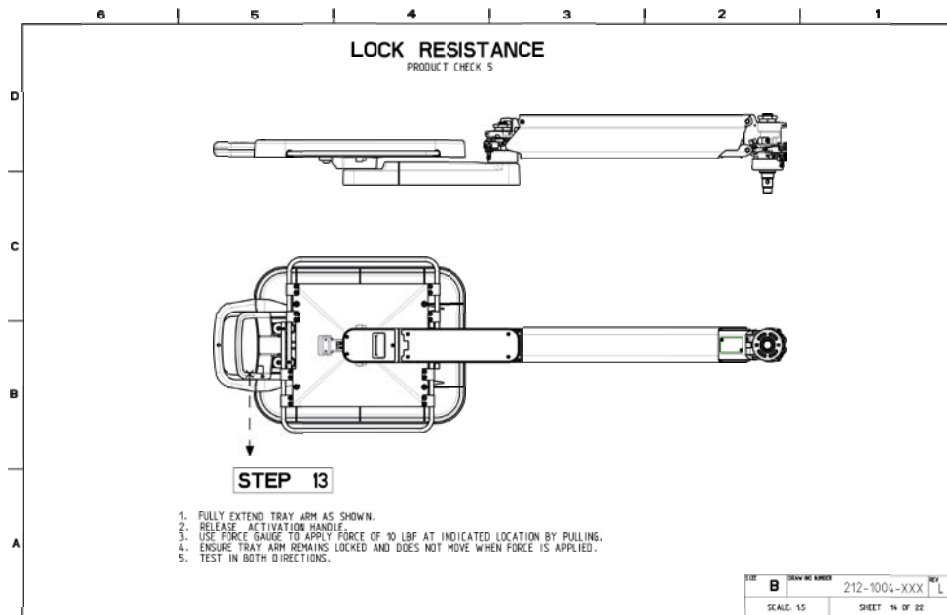
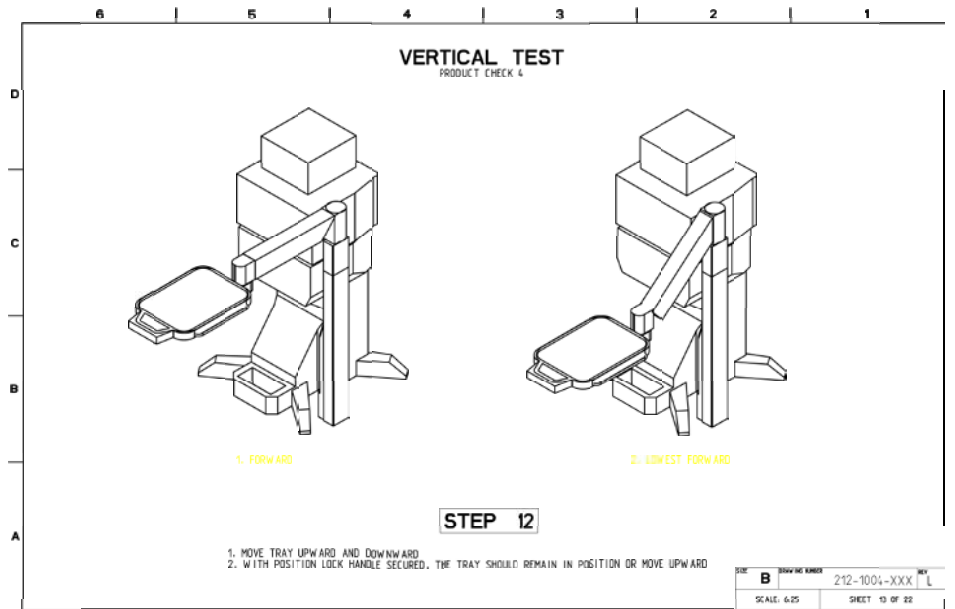
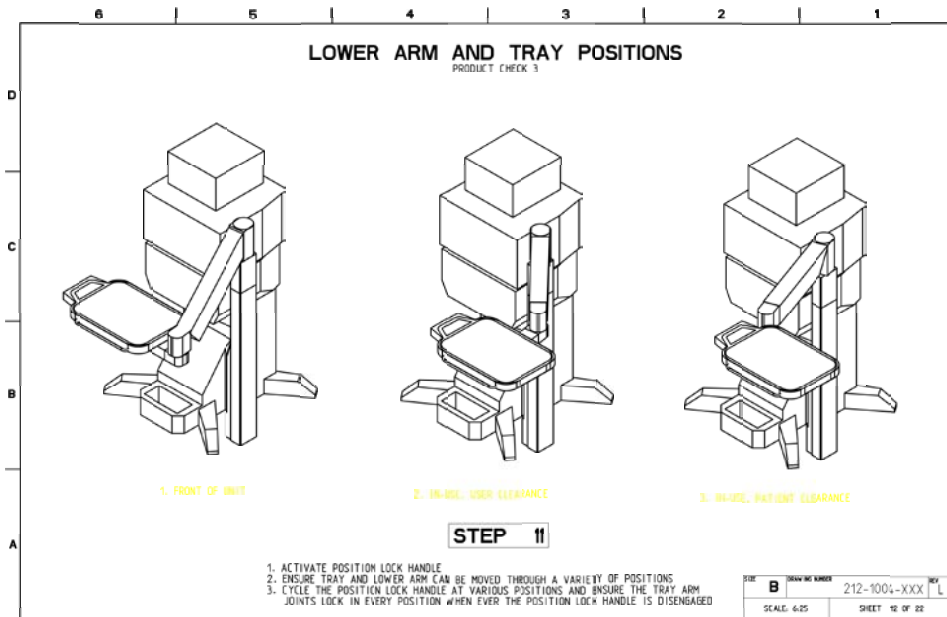
SCALE: 6:25 SHEET 1 OF 22

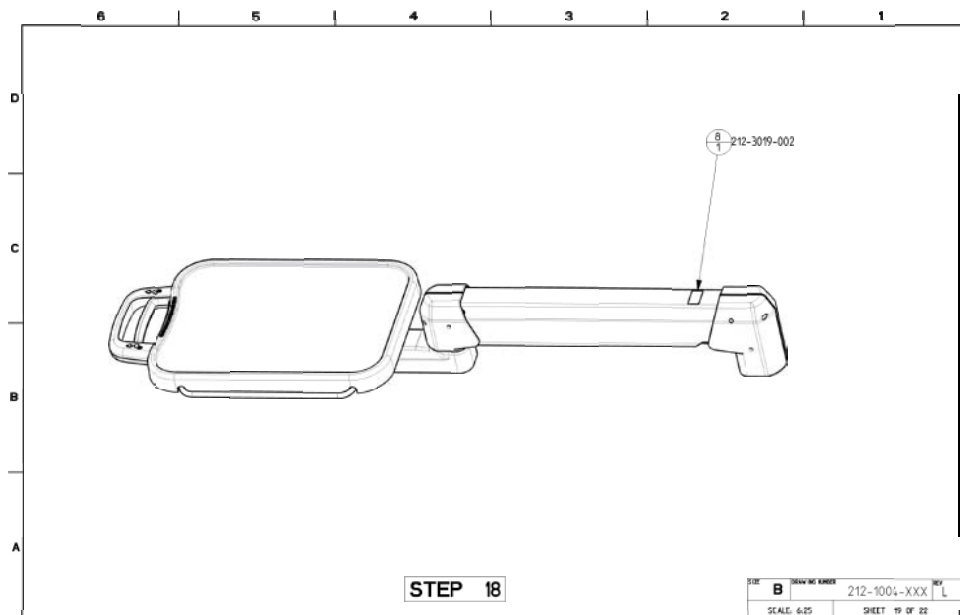
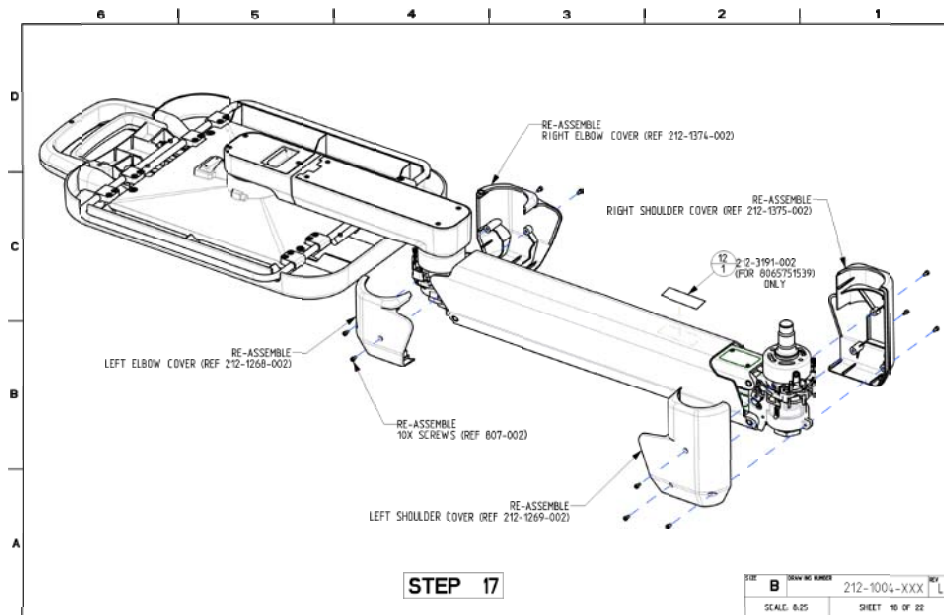
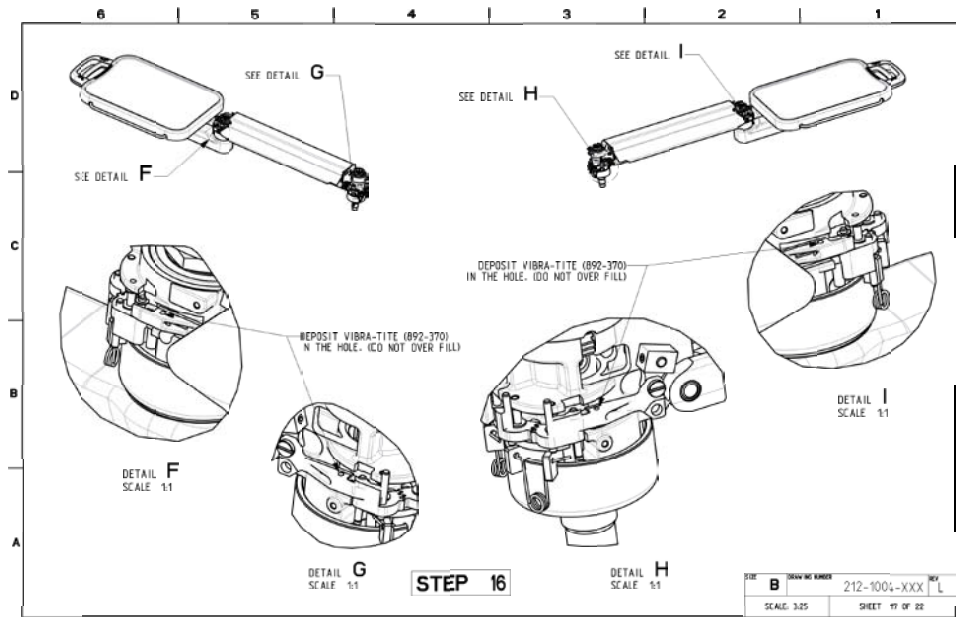
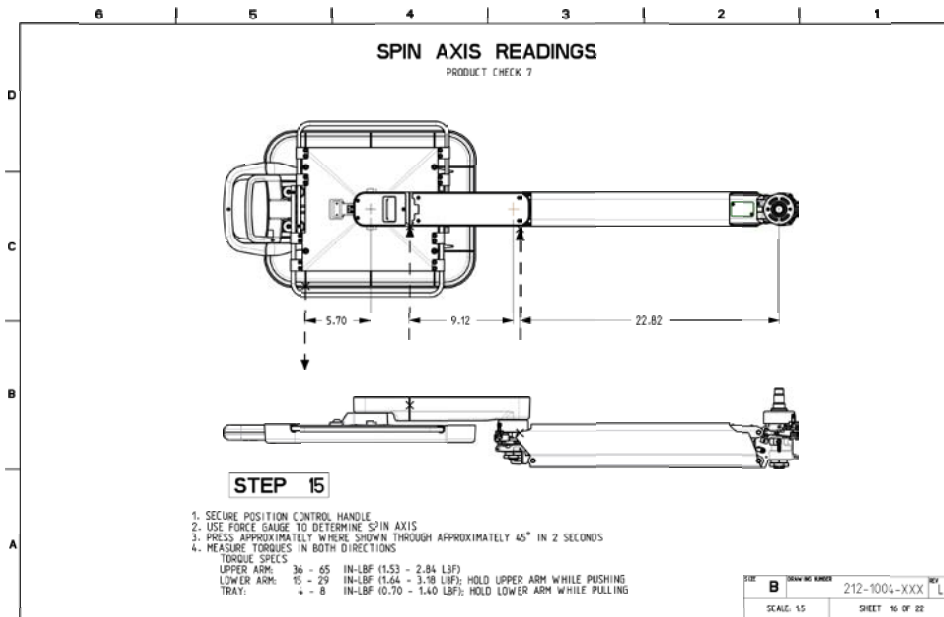
VERSION: 1.2

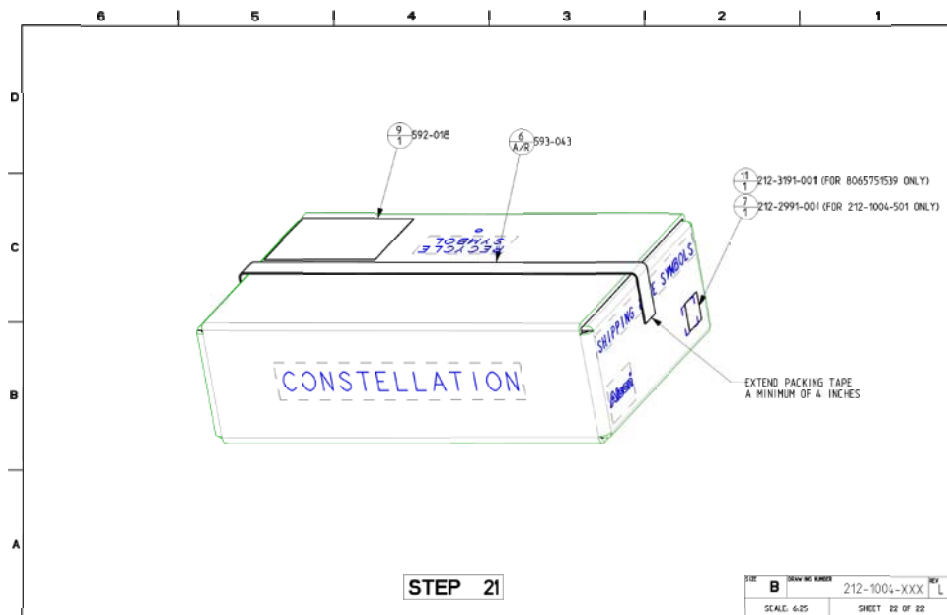
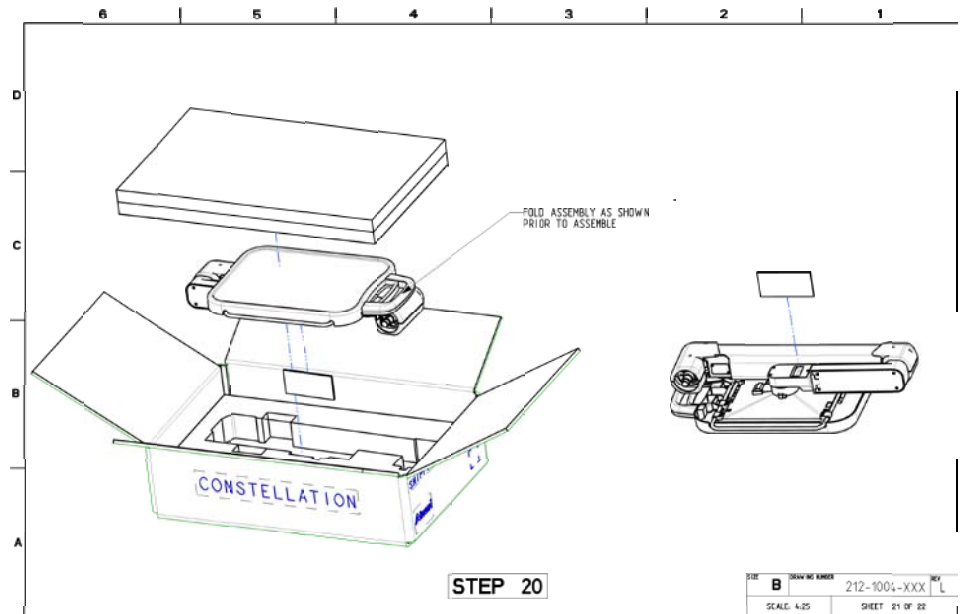
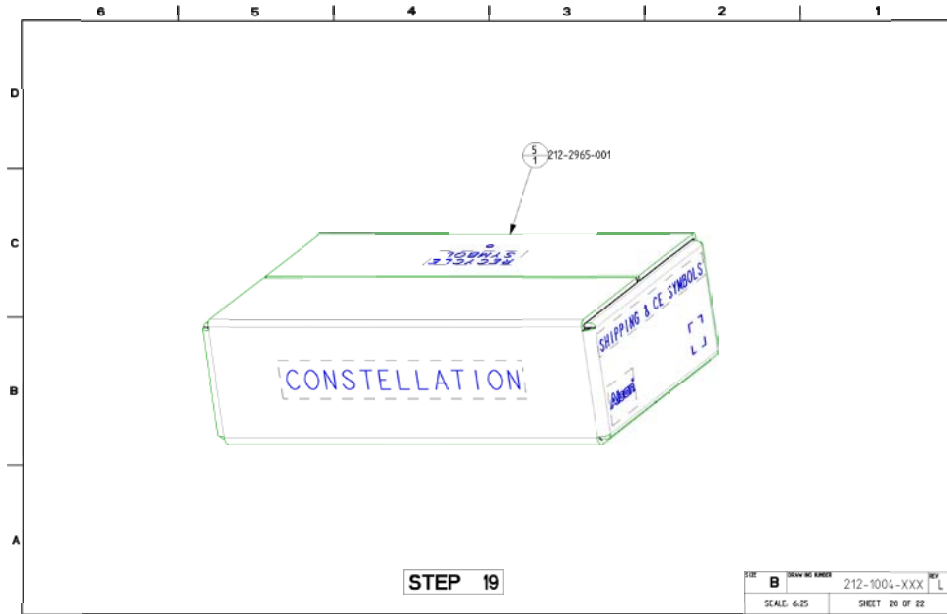












212-1191-501 ASSY, ARM, LOWER

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-3010-001	PIN,LOCKING,WRIST	2
002	212-1524-001	AXLE,WRIST	1
003	212-2403-001	WRIST,TRAY ARM,MACHINED	1
004	811-010	SCREW,FLAT HD SKT,M4X10 SST	5
005	212-3457-001	STOP,WRIST	1
006	212-2450-001	FOREARM ASSY,TRAY,ARM MACH	1
007	212-3456-001	SPACER,BEARING	1
008	212-1516-001	NUT,BEARING	1
009	797-124	WASHER,LOCK,INT M14X1THK SST	1
010	600-193	BEARING,BALL,15X35X11 DBL SHLD	1
011	212-1517-001	HOUSING,SWIVEL	1
012	212-1518-001	LINK,WRIST	1
013	212-1526-001	LEVER,WRIST	2
015	773-092	RING,RETAINING,EXT .125 DIA	4
016	212-1520-001	PIN,LINKAGE	2
017	212-1525-001	PIN,PIVOT,LEVER	2
018	807-003	SCREW,CAP HD SKT,M3X8 SST	4
019	212-1519-001	LINK,FOREARM	1
020	767-179	NUT,HEX,JAM 7/16-20 RH SST	1
021	212-1522-001	SLIDER,WRIST	1
022	691-326	SPRING,CPRSN,.30X1.75LX.03 SST	2
023	811-001	SCREW,FLAT HD SKT,M3X6 SST	7
024	212-1836-001	COVER,BOTTOM,FOREARM	1
025	212-1259-001	COVER,BOTTOM,WRIST	1
026	691-340	SPRING,CPRSN,.850DIA X.75L SST	1
027	212-3165-001	WASHER,17MM X 24MM X 1MM,SST	1
028	891-027	LUBRICANT,PFPE/PTFE,8981	AR

AR = As Required

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) IN BOTTOM.
4. -SXX- SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -SXX- SERIES P/N.
5. BUILD PER 992-2120-003.

REVISION HISTORY

REV	ECN	DATE
P16	NOT RELEASED	03/13/08
A	20080815	03/14/08
B	20081999	08/05/08
C	20082122	08/19/08
D	20091307	07/28/09
E	EN052334ECN	03/24/14

TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-1191-501	ASSY,ARM,LOWER	212-1191-501S	E	ASSY,ARM,LOWER SERVICE

SEE SEPARATE PART LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
1	212-1191-501	ASSY,ARM,LOWER		

APPROVED

BY	DATE	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.	DESCRIPTION
J. ATHERLEY	08/15/05		ASSY,ARM,LOWER
B. LEE	03/11/08		
R. VAN	03/11/08		

DATE: 2/23/2007

POM LINK MODEL ATTRIBUTES NAME: 212-1191-501.PROD VERSION: E.1

STEP 1

INSERT PINS WITH SLOTTED SIDE FACING UP TO ENGAGE INSERT IN FUTURE STEP

212-1524-001

811-010

212-2403-001

212-3010-001

212-2403-001

212-2403-003

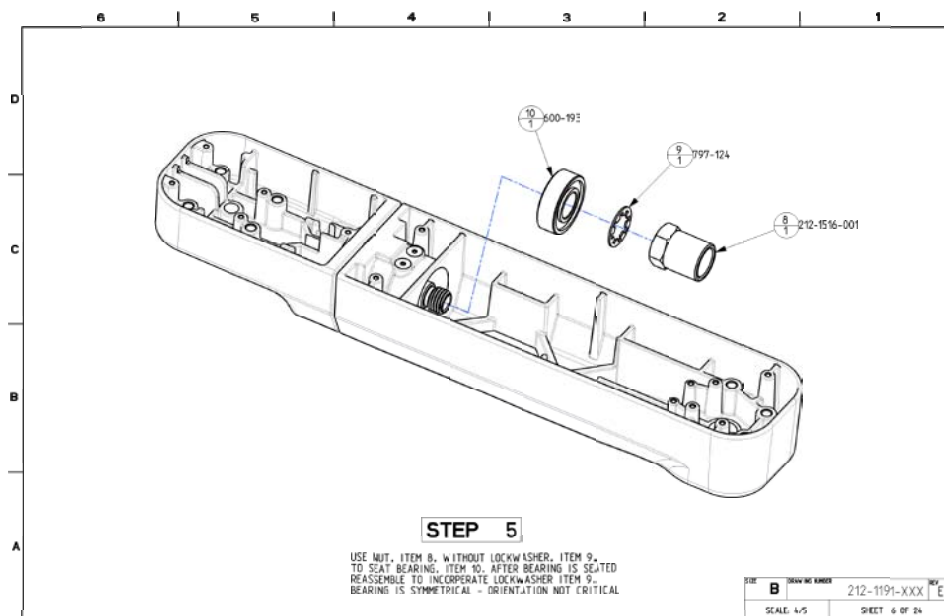
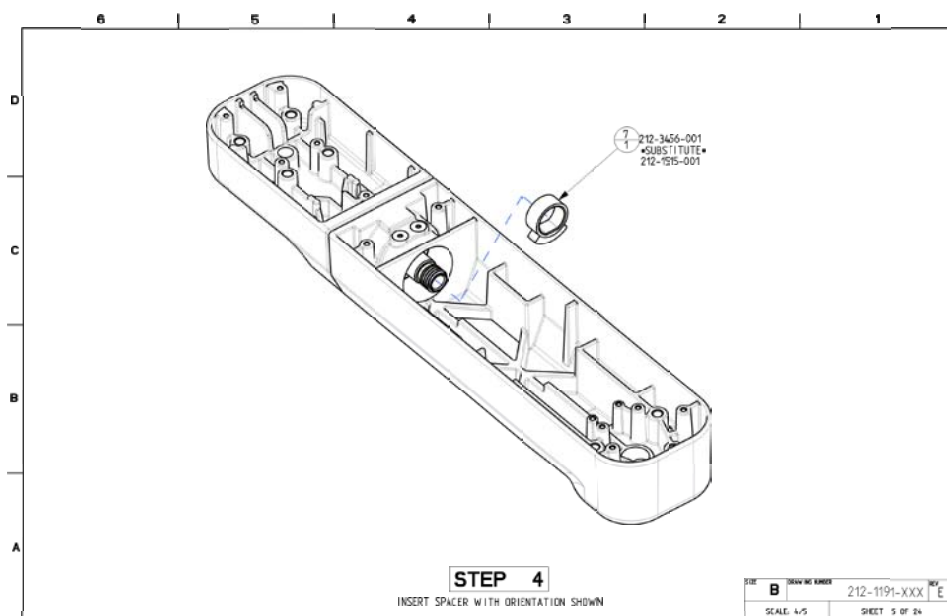
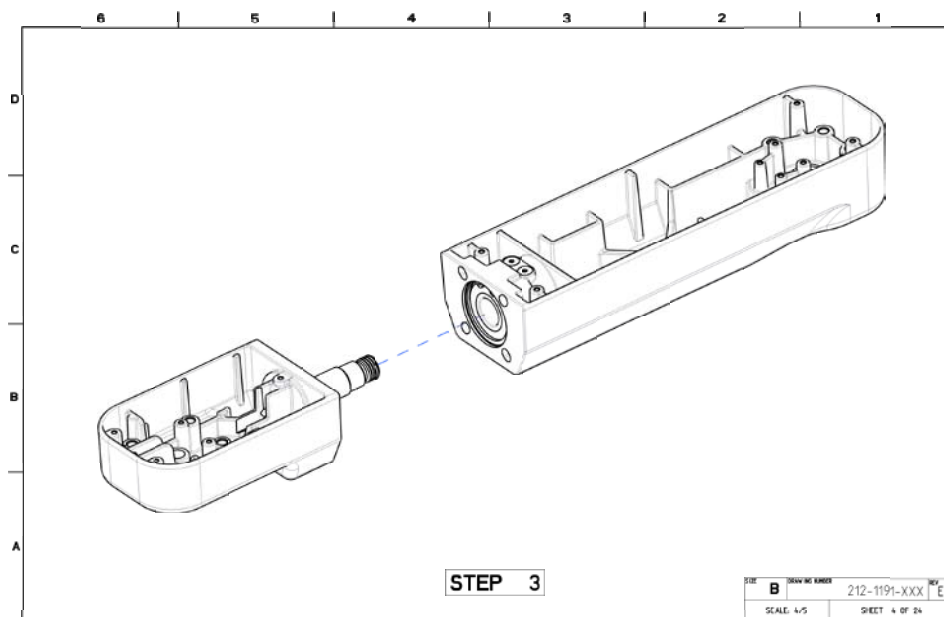
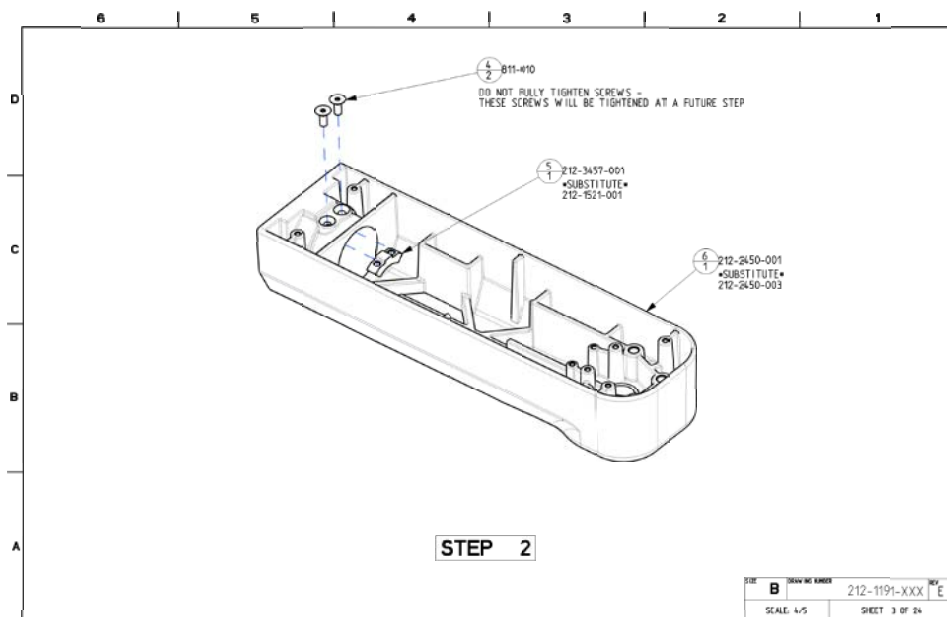
STEP 1

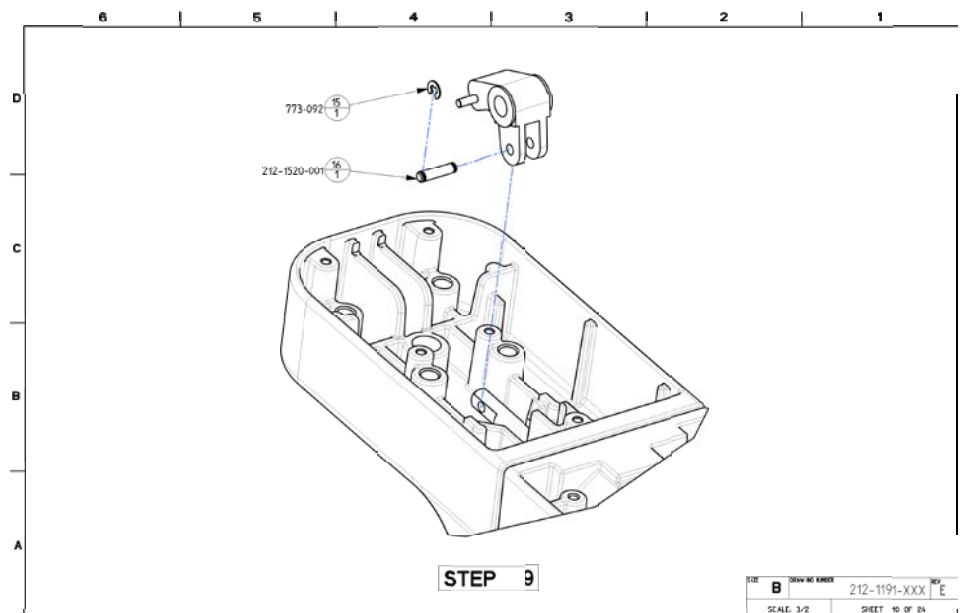
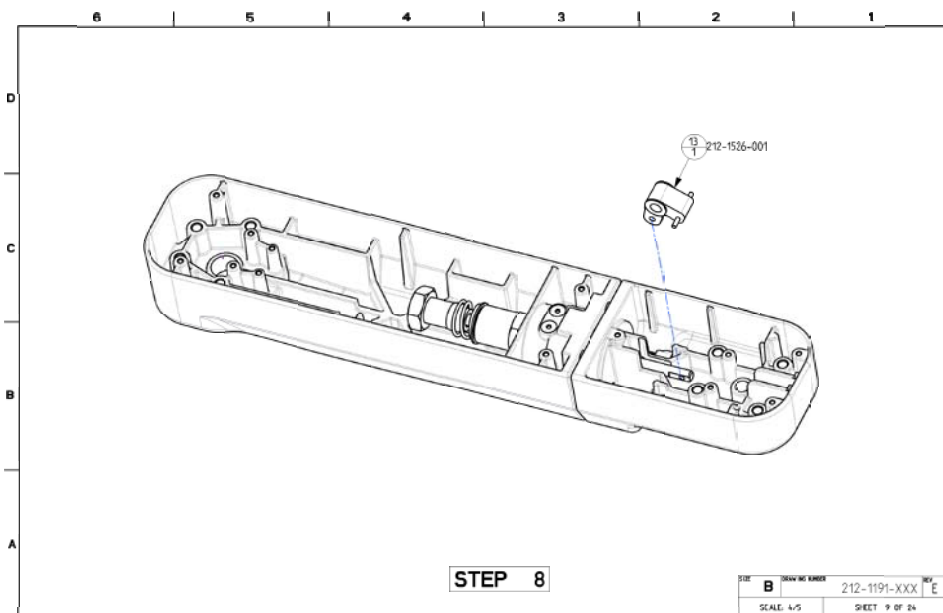
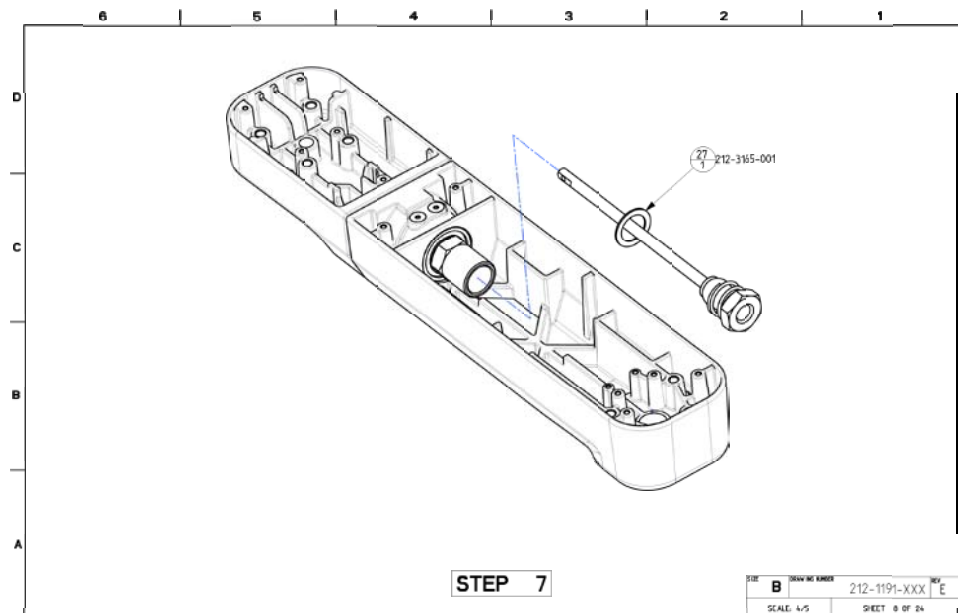
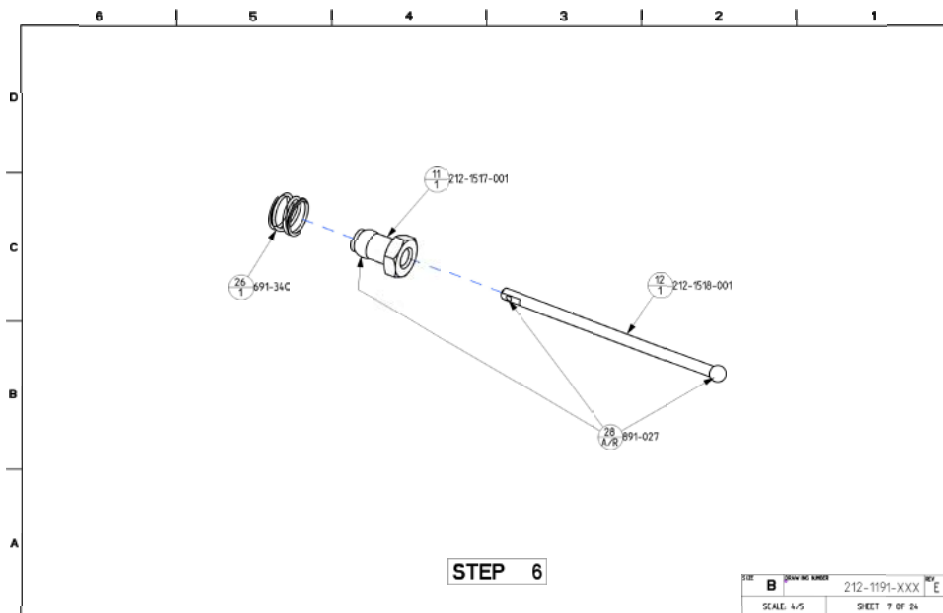
APPROVED

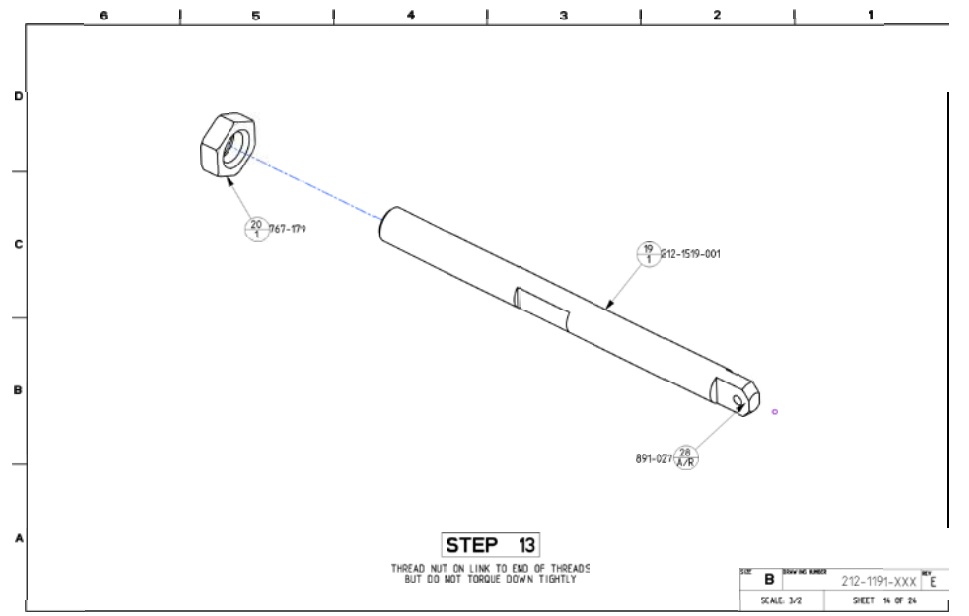
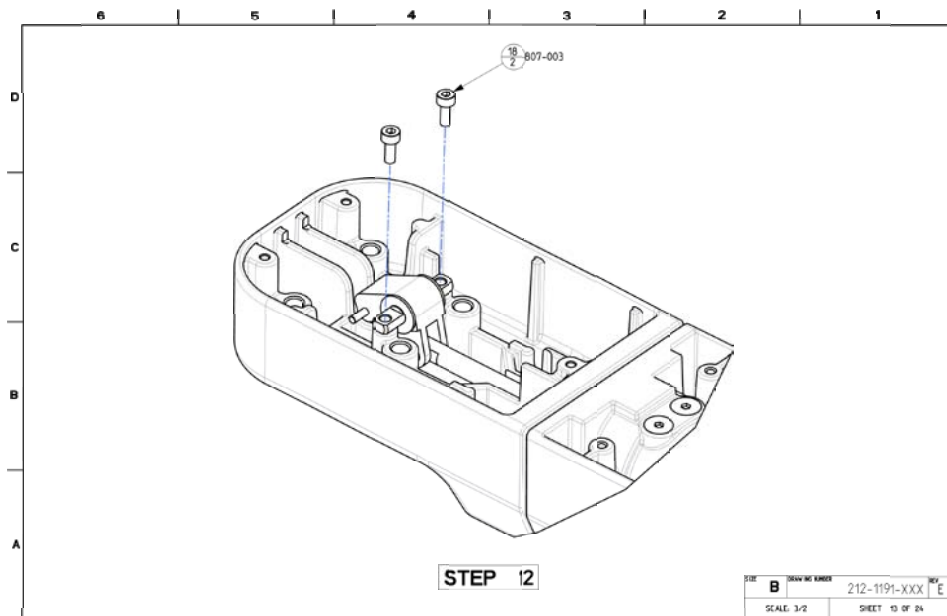
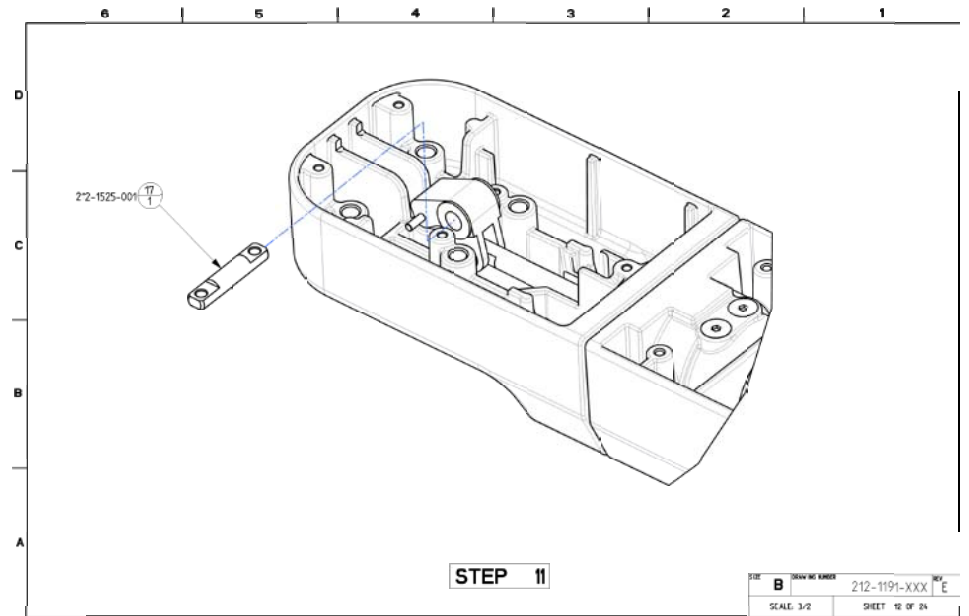
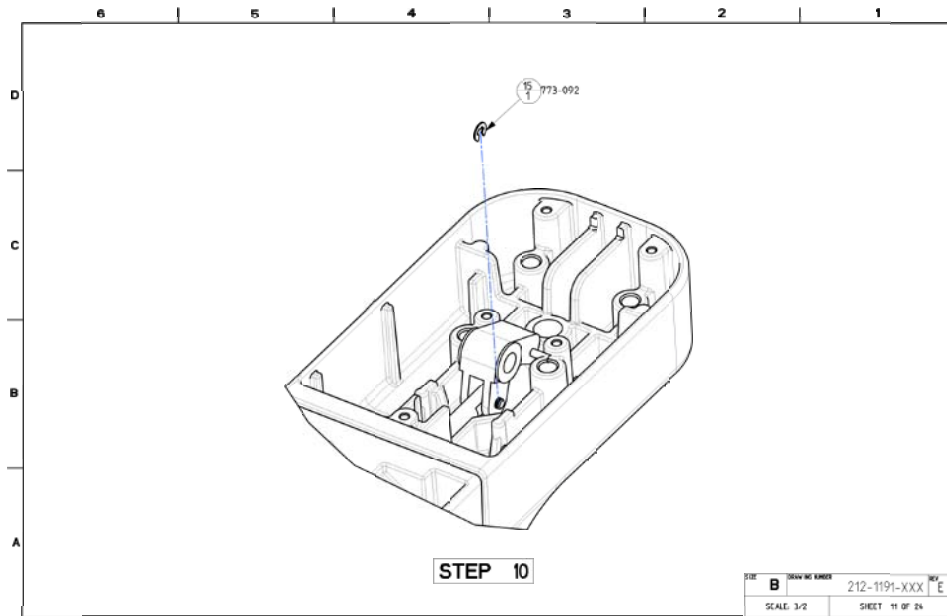
BY	DATE	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION WHICH SHALL NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.	DESCRIPTION
B	03/11/08		ASSY,ARM,LOWER

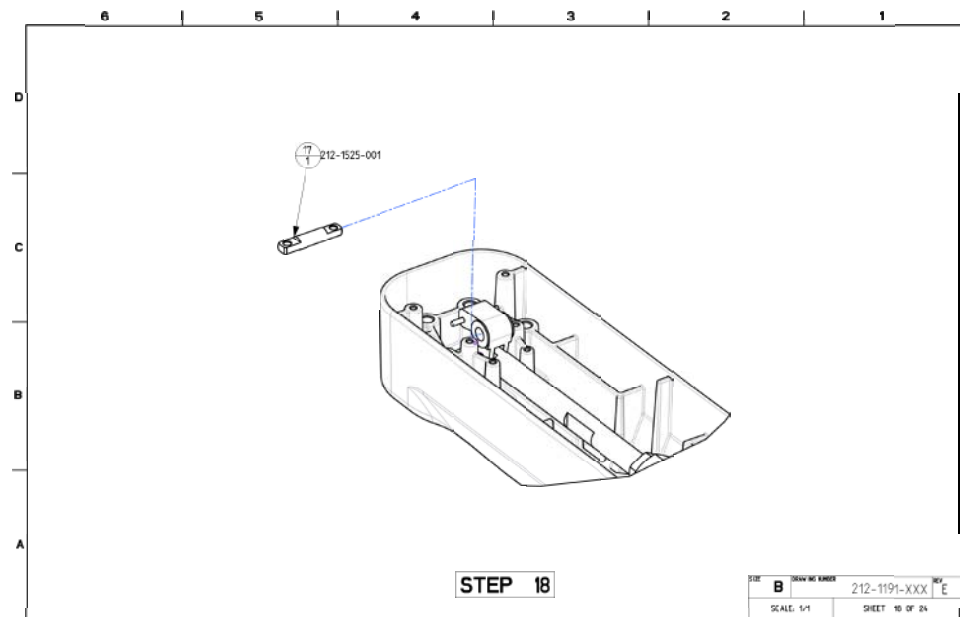
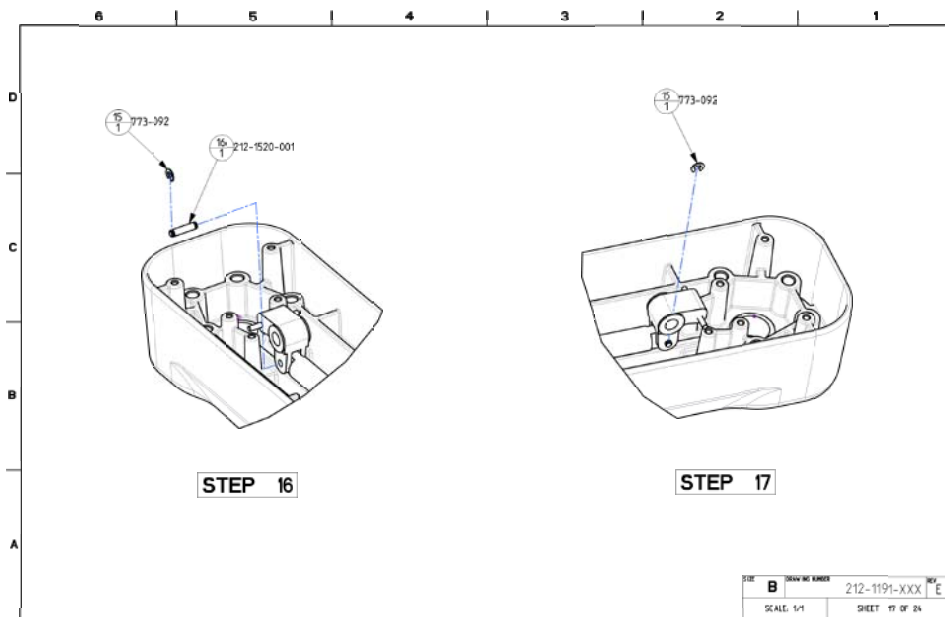
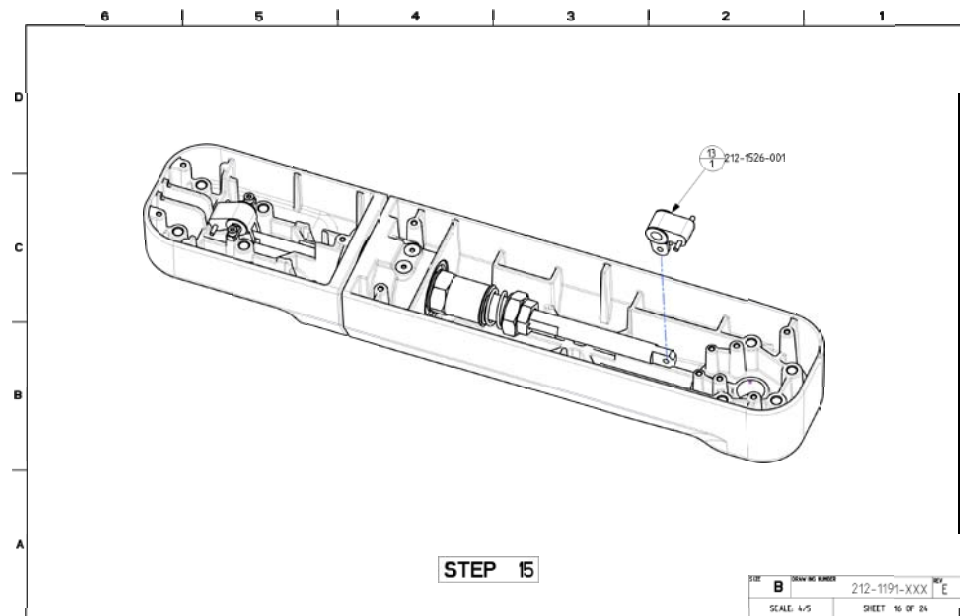
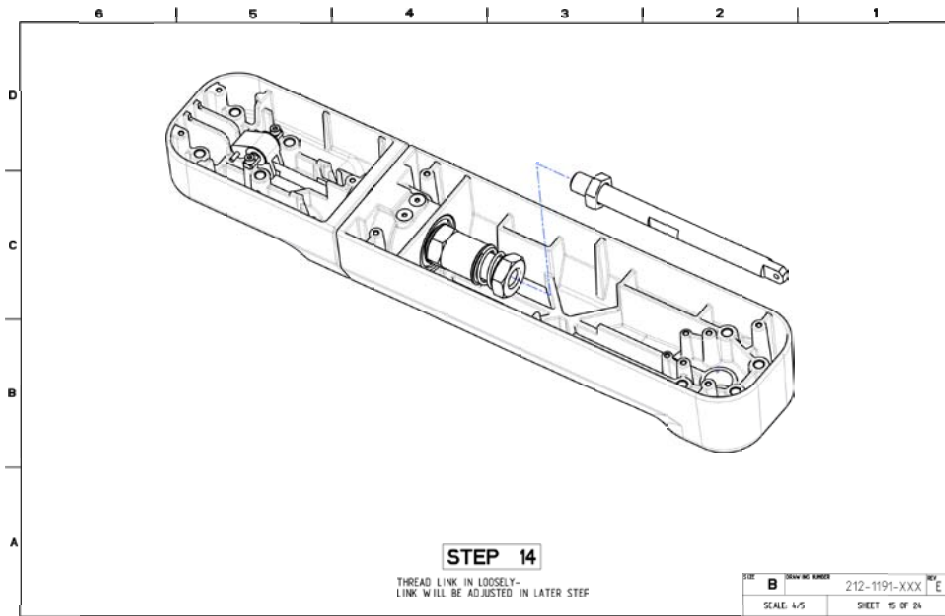
DATE: 2/23/2007

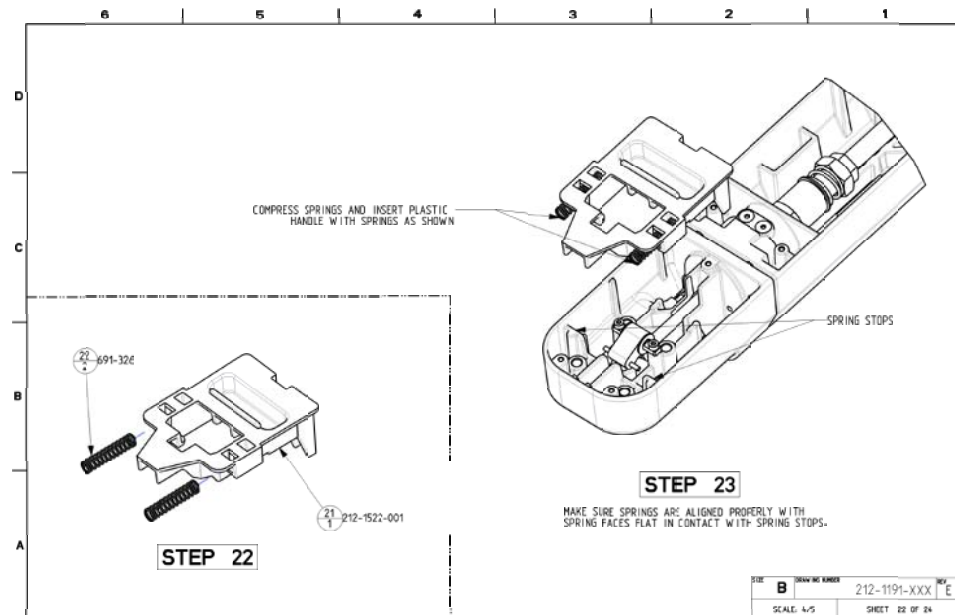
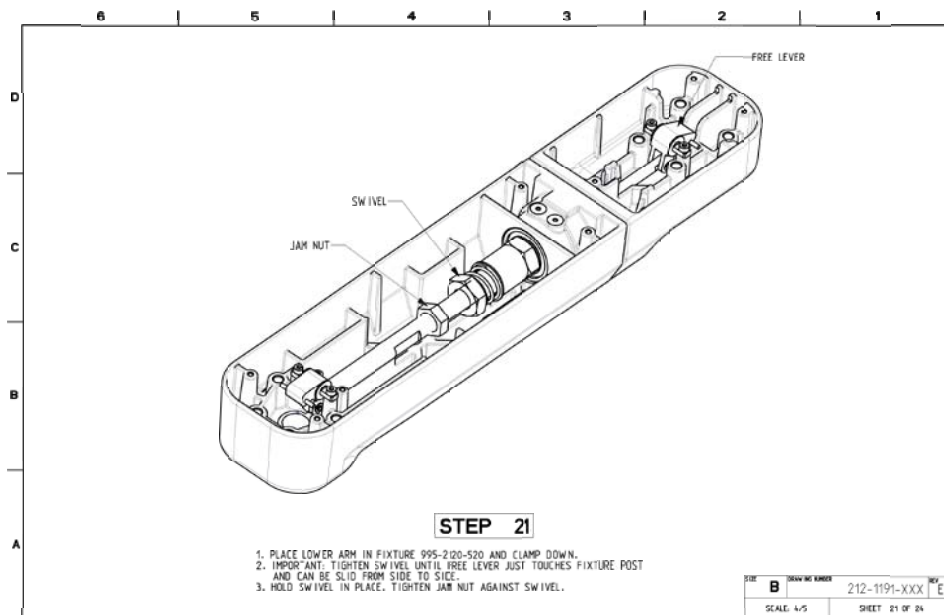
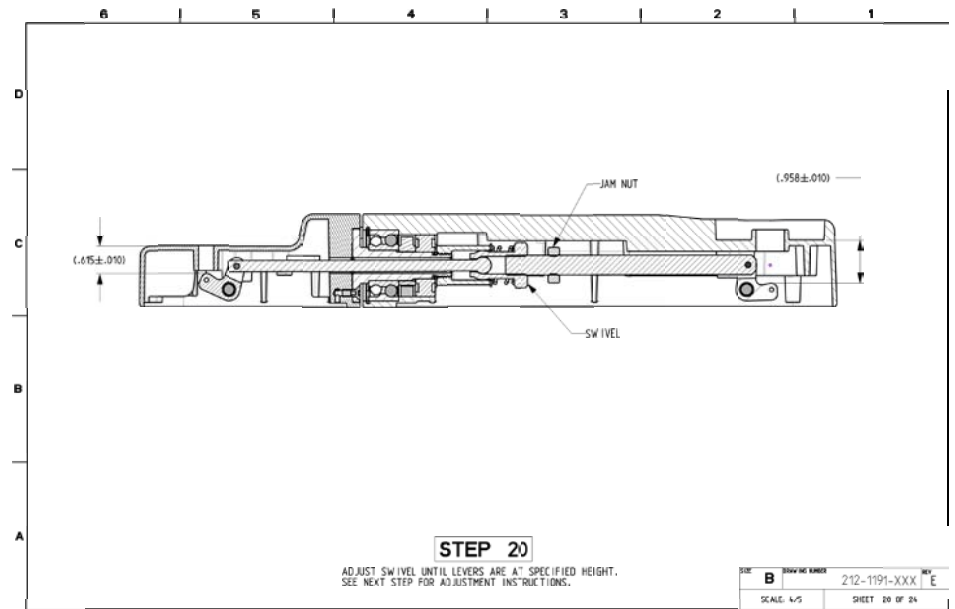
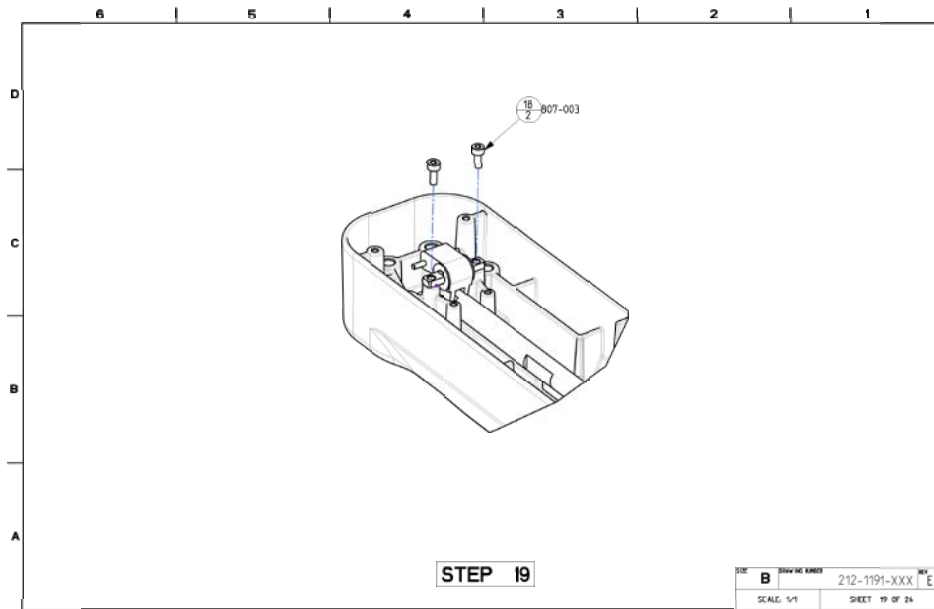
POM LINK MODEL ATTRIBUTES NAME: 212-1191-501.PROD VERSION: E.1

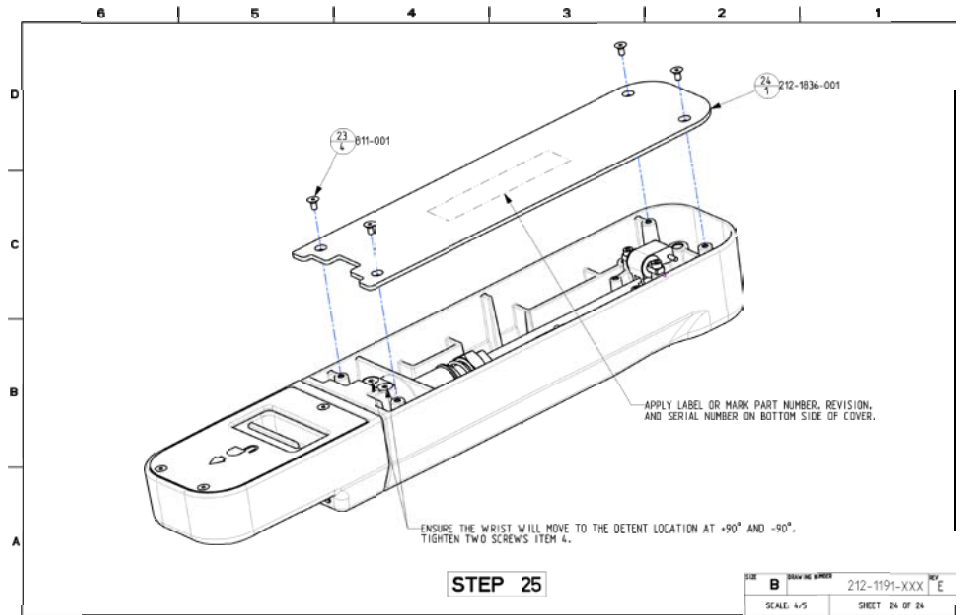
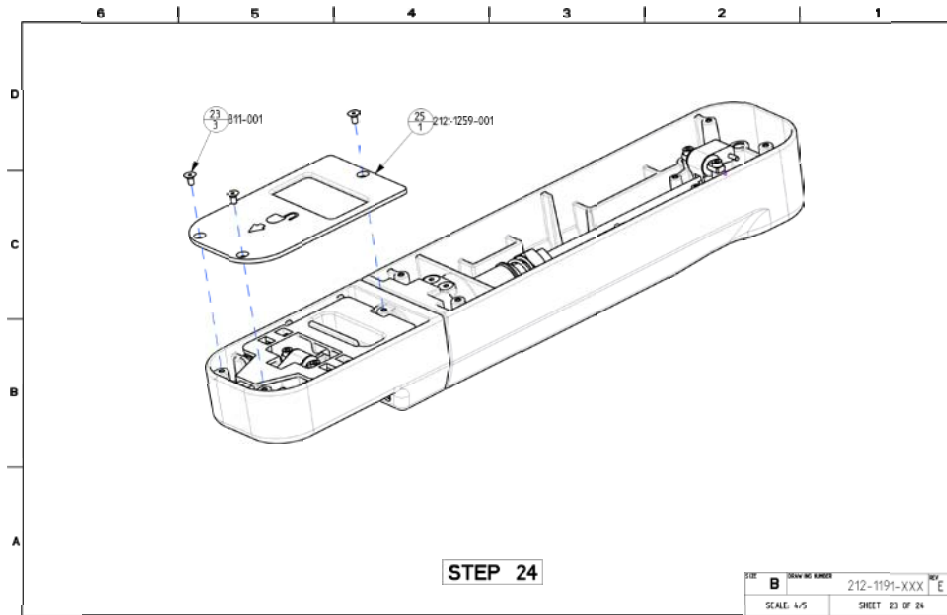












212-1158-501 ASSY, TRAY

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-1244-001	WASHER,,641X1.480X.118,SST	1
002	212-3053-001	WASHER,,632X1.480X.145,DELRLIN	1
003	212-1254-001	SHAFT,RING,LOCKING	1
004	815-014	WASHER,SPRING,1.432X.828X.020	1
005	212-2441-001	FRAME ASSY,SUPPORT,TRAY MACH	1
006	803-041	NUT,HEX,M14X1.5X7THK SST	1
007	212-1285-001	BLADE,LOCKING	2
008	691-325	SPRING,CPRSN,,18X.63LX.018 SST	2
009	212-2919-001	ROLLER	2
010	212-3451-001	BRACKET ASSY,ROLLER	2
011	212-2921-001	SHAFT,PLUNGER	1
012	212-2920-001	PLATE,ACTUATION	1
013	212-3444-001	LINK ASSY,TRAY,2	1
014	212-1720-001	PIN,LINKAGE,LINK 2	4
015	773-092	RING,RETAINING,EXT .125 DIA	10
016	212-3443-001	LINK ASSY,TRAY,1	1
017	212-1539-001	HANDLE,TRAY,ARM MOLDED	1
018	212-1719-001	PIN,LINKAGE,HANDLE	1
019	212-1525-001	PIN,PIVOT,LEVER	2
020	807-002	SCREW,CAP HD SKT,M3X6 SST	12
021	807-026	SCREW,CAP HD SKT,M5X10 SST	20
022	212-1256-001	HOLDER,HANDLE	8
023	212-1321-001	TRAY,MOLDED	1
024	212-1320-001	BAR,HANDLE,TRAY ARM	2
025	796-134	WASHER,FLAT,,250X1.00X.060 SST	2
026	212-2922-001	CONE,ACTUATION	2
027	811-001	SCREW,FLAT HD SKT,M3X6 SST	2
028	811-011	SCREW,FLAT HD SKT,M4X12 SST	1
029	212-2931-001	LINK,3,TRAY	1
030	807-003	SCREW,CAP HD SKT,M3X8 SST	4
031	892-370	ADHESIVE,VIBRA-TITE,RED	AR
032	798-336	WASHER,FLAT,,125X.375X.030 SST	2
033	593-095	TAPE,TEFLON,SKIVED 1X.01	0.0037
034	891-027	LUBRICANT,PFPE/PTFE,8981	AR

AR = As Required

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. -5XXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -5XX SERIES P.N.
5. BUILD PER 992-2120-003.

REVISION HISTORY

REV	ECN	DATE
P20	NOT RELEASED	03/17/06
A	20000049	03/24/06
B	20008124	04/29/06
C	20008134	06/24/06
D	20008199	08/05/06
E	20008212	08/19/06
F	20009107	07/28/09
G	EN05233AECN	03/25/14

TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-1158-501	ASSY,TRAY	212-1158-501S	1	ASSY,TRAY,SERVICE

SEE SEPARATE PART LIST

BILL OF MATERIAL

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BY JOHN ATHERLEY	DATE 12/04/06	THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT PRIOR WRITTEN PERMISSION OF ALCON.		
DESIGNED BY A. FERM N	DATE 12/04/06	ALCON		
APPROVED BY BLUCZEK	DATE 12/04/06	212-1158-XXX		
ISSUED BY 2/23/2007	SCALE: 1:20 SHEET 1 OF 24			
PDM LINK MODEL ATTRIBUTES		NAME: 212-1158-501.DWG		VERSION: 6.1

STEP 1

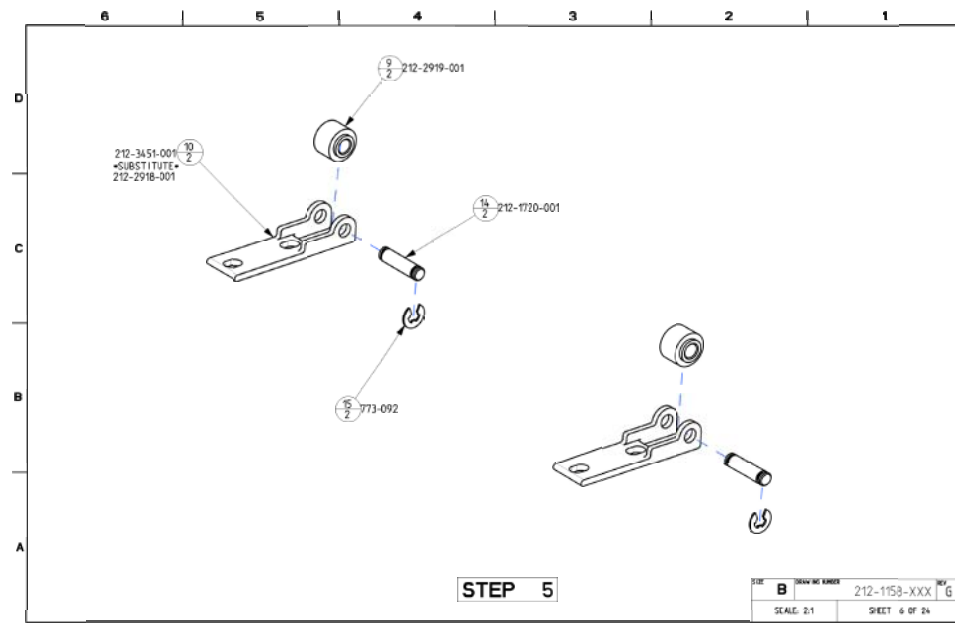
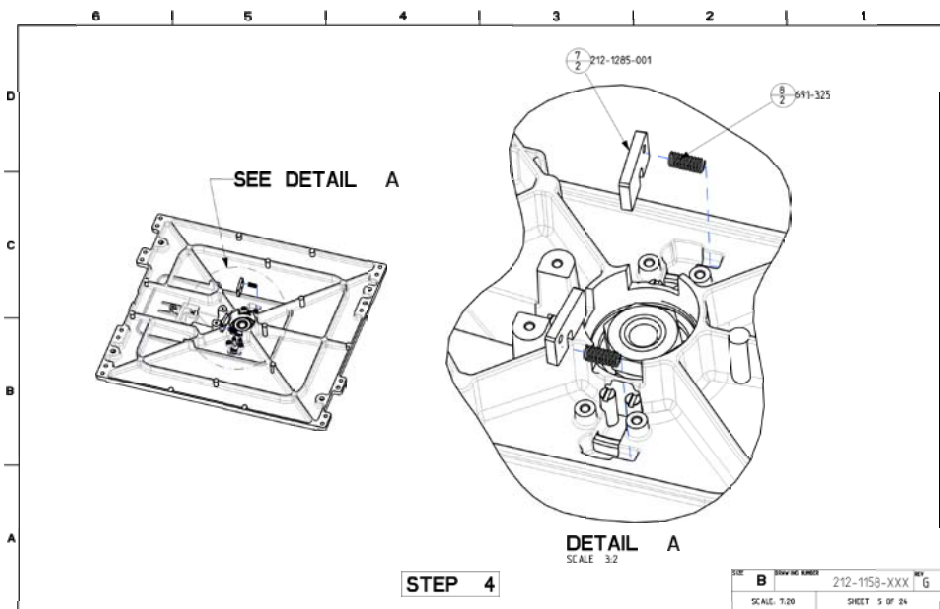
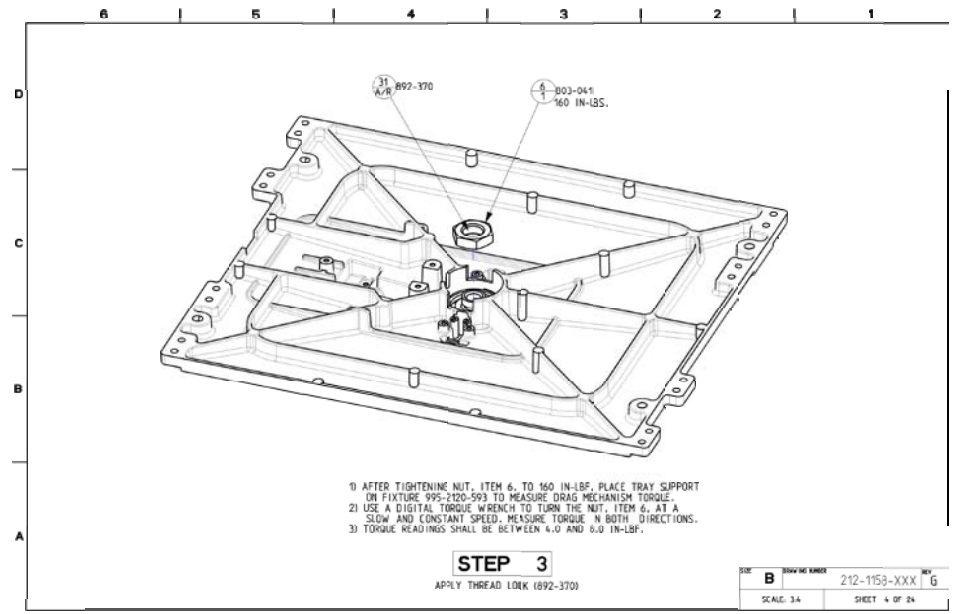
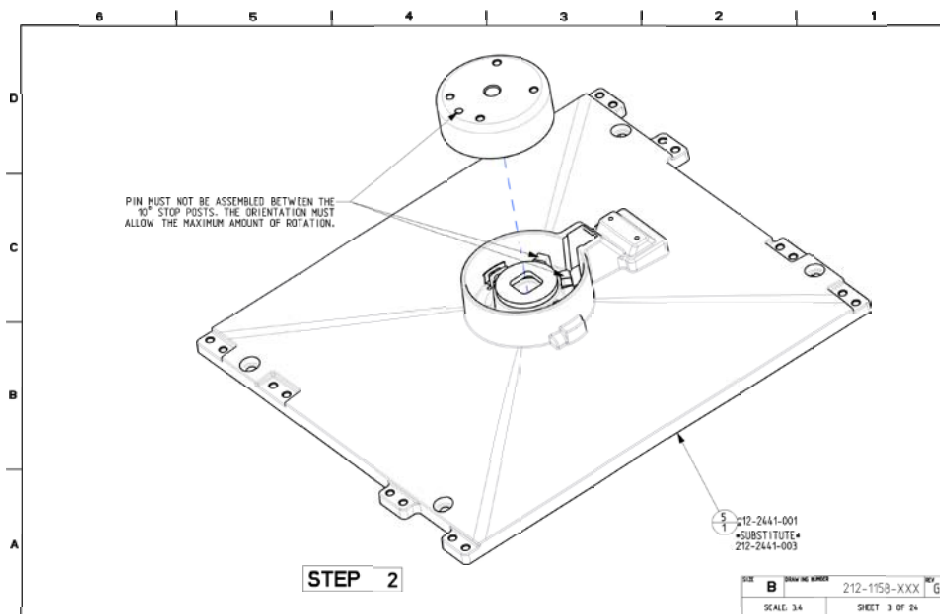
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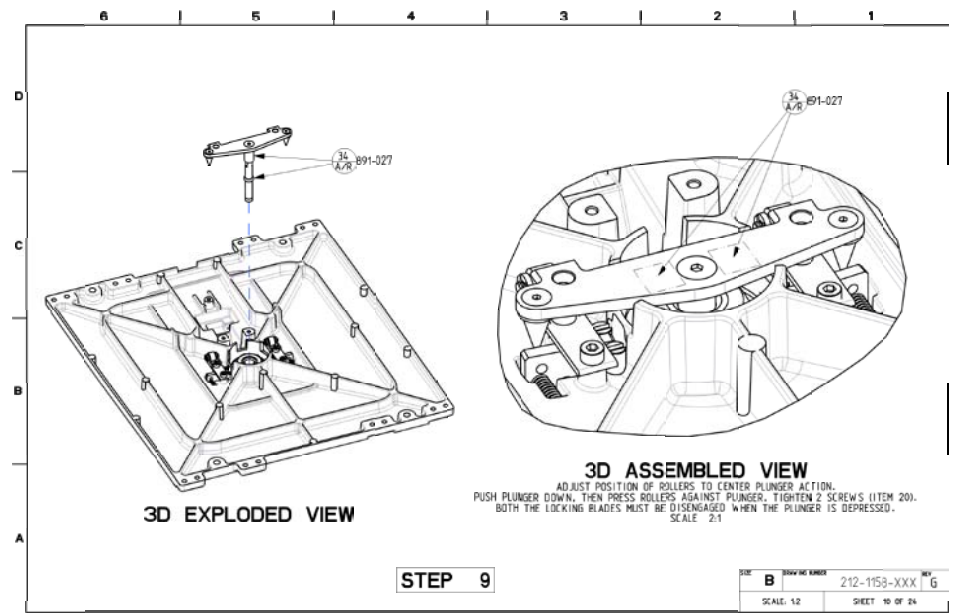
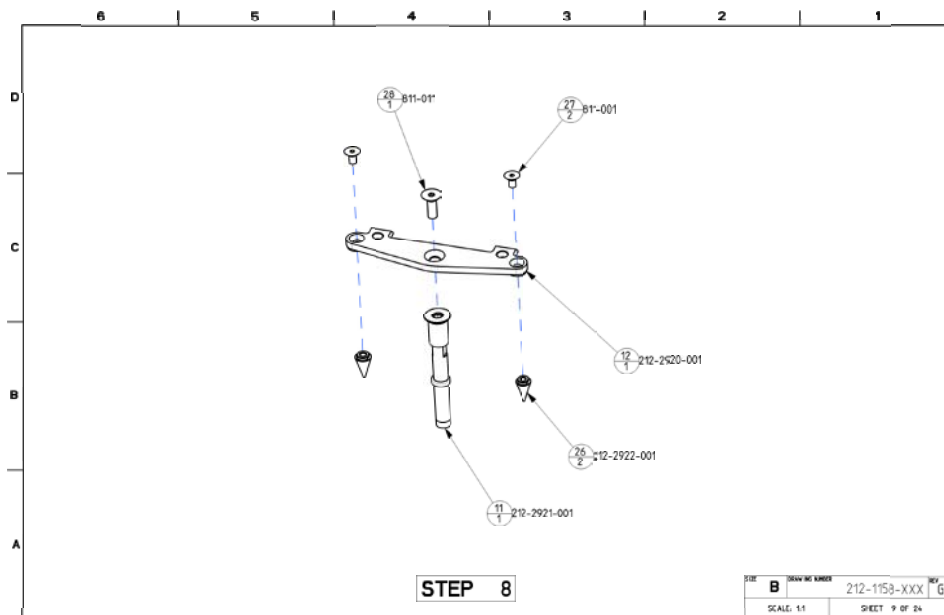
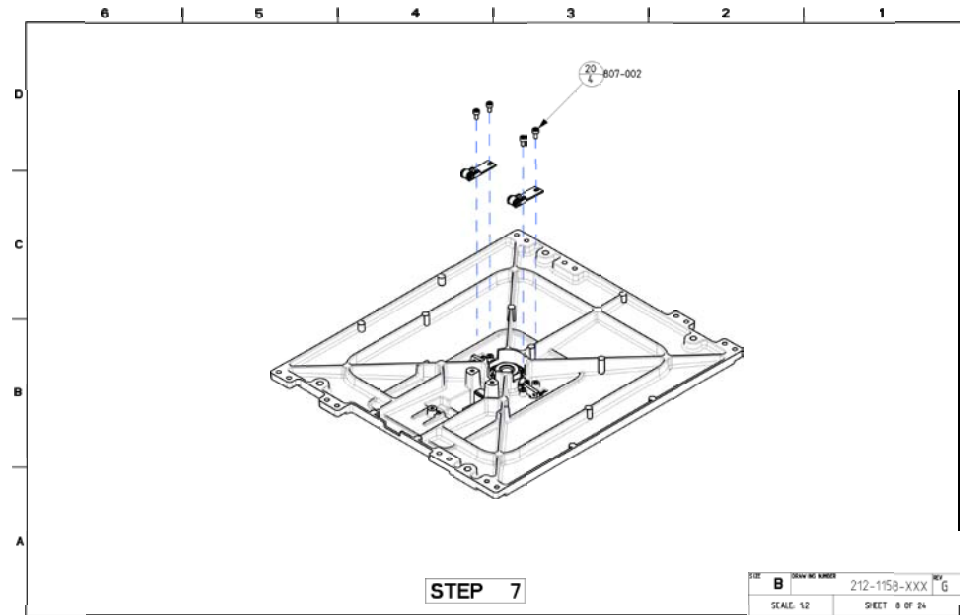
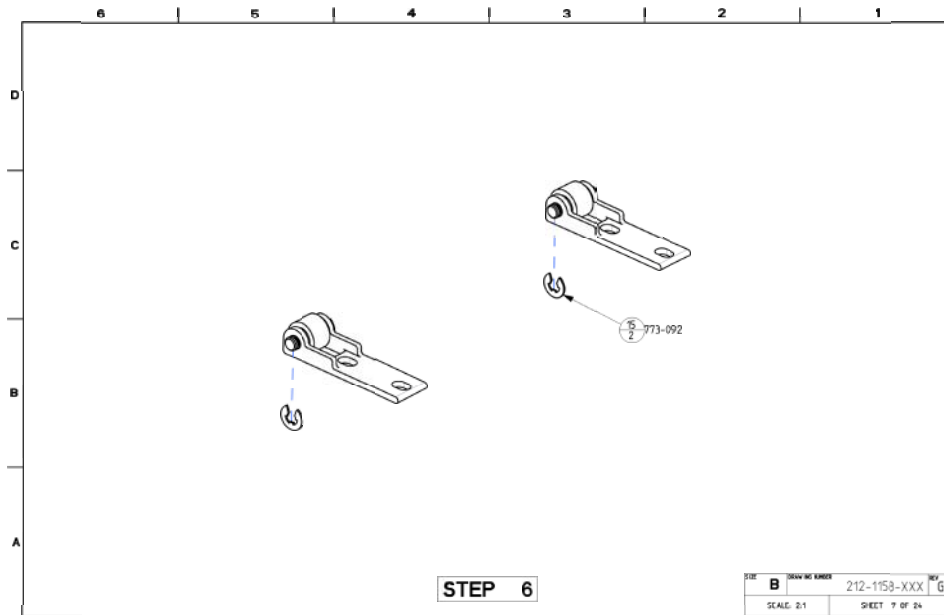
REMOVE PACKING OIL RESIDUE

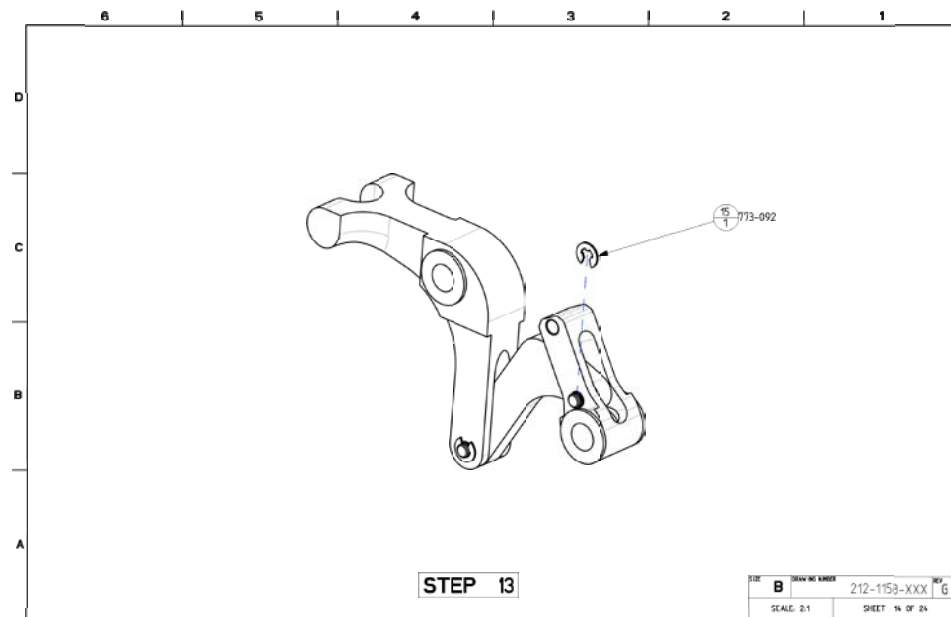
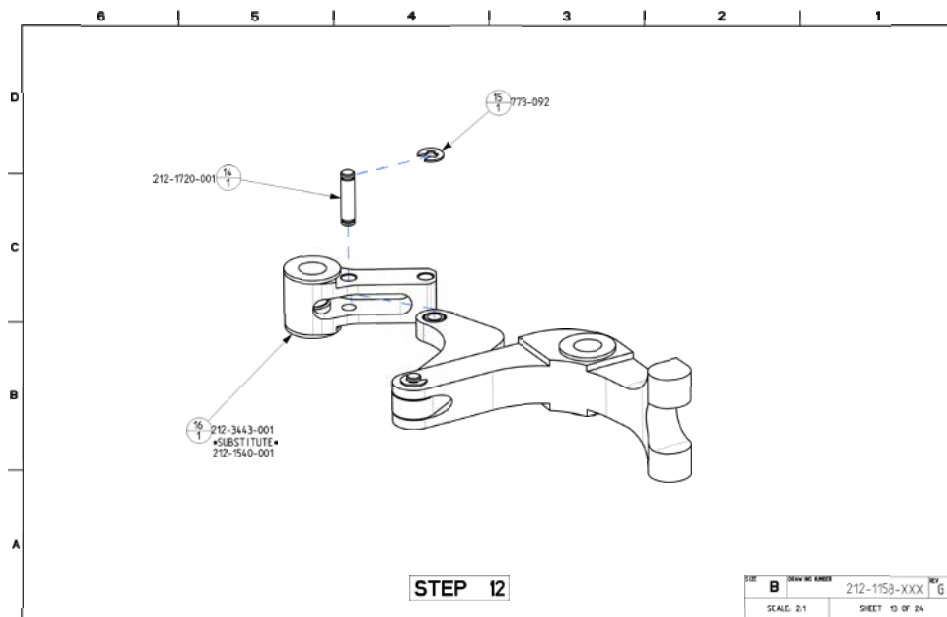
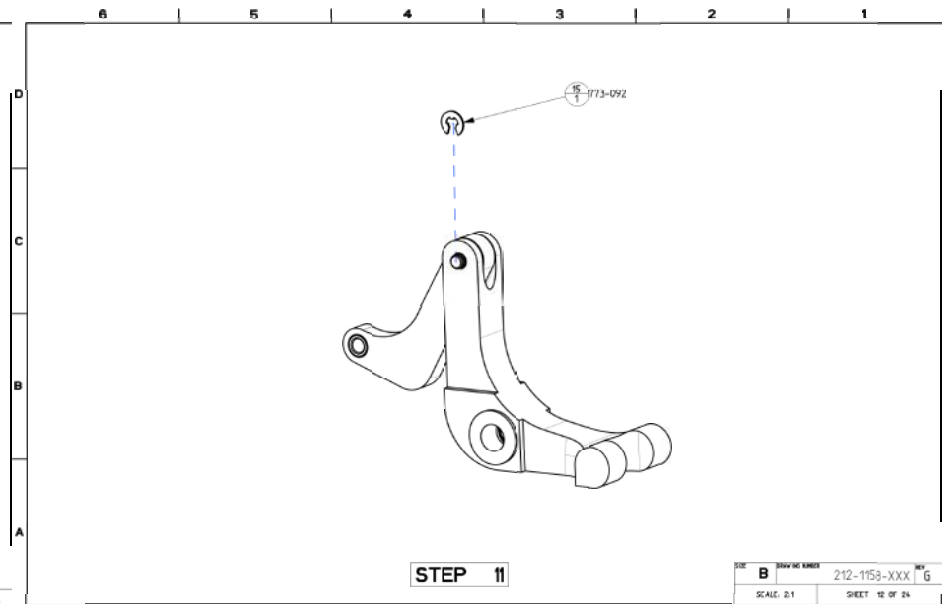
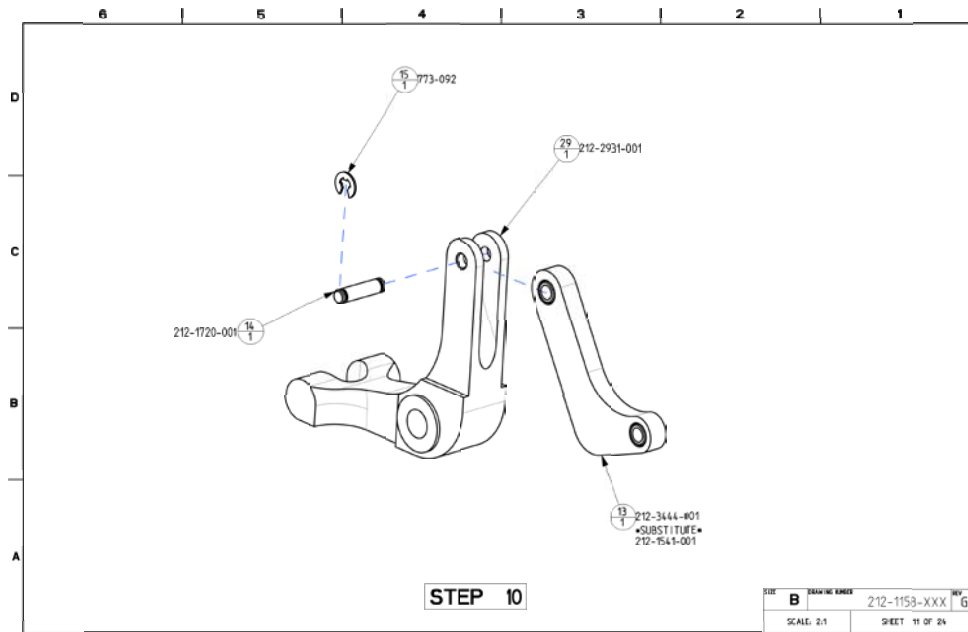
STEP 1

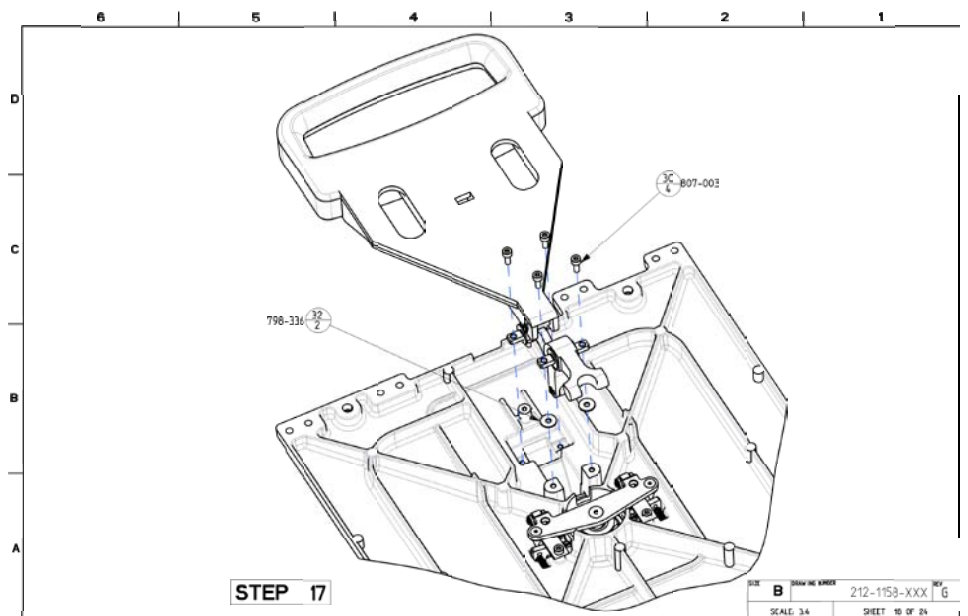
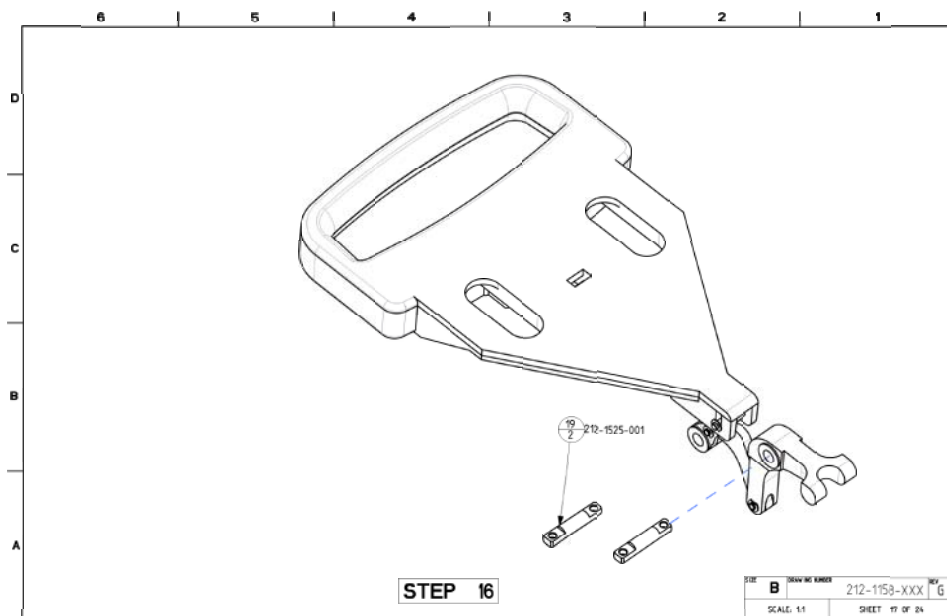
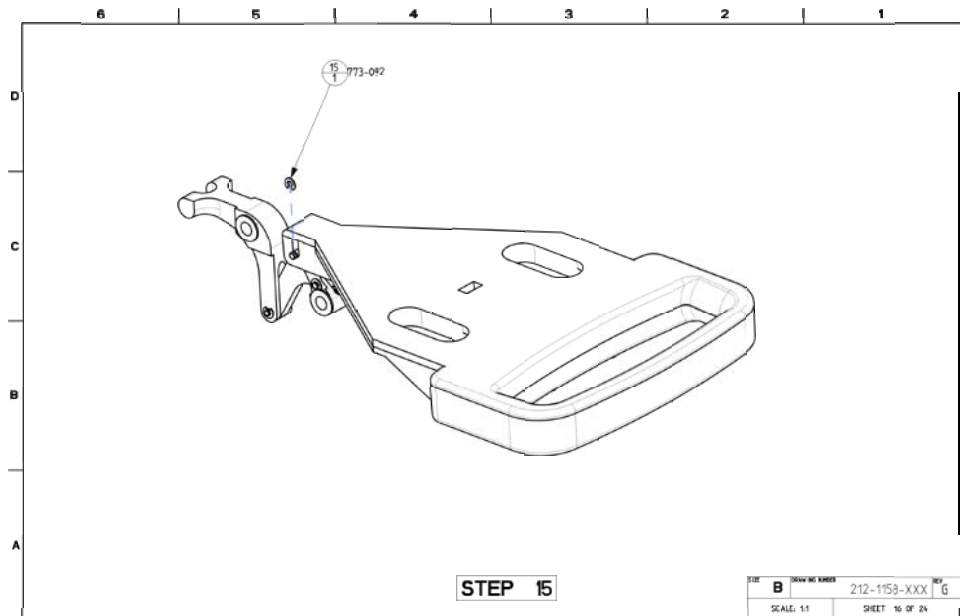
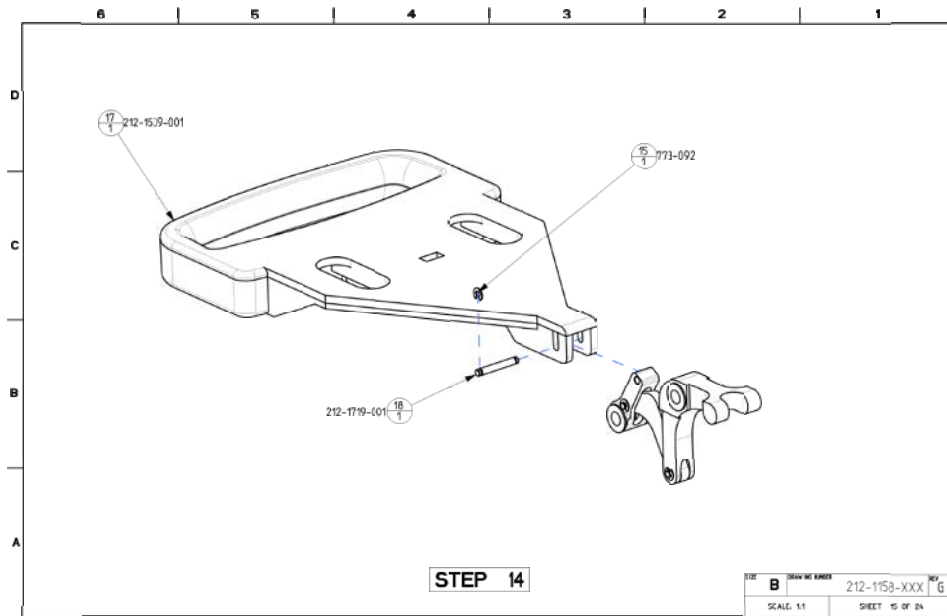
B 212-1158-XXX

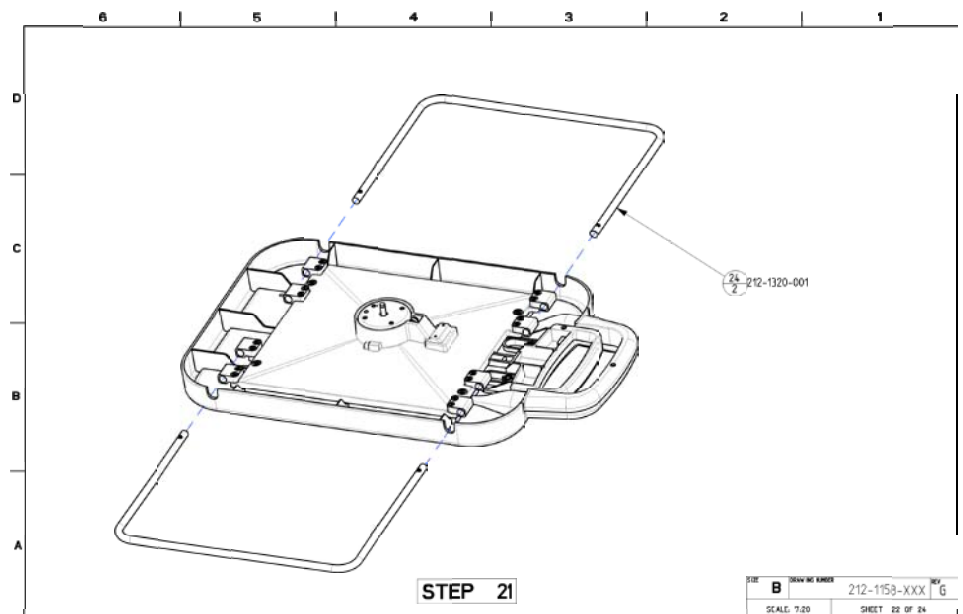
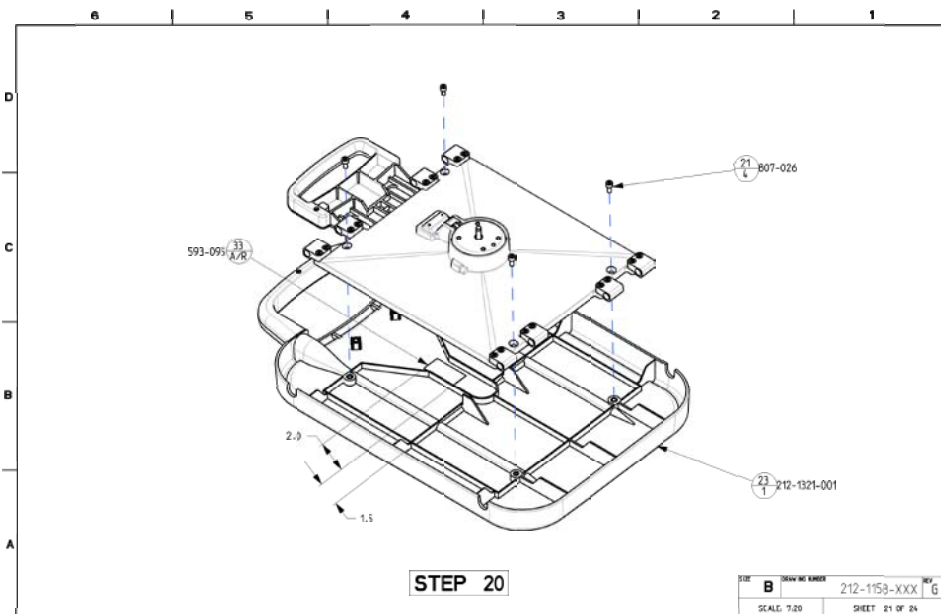
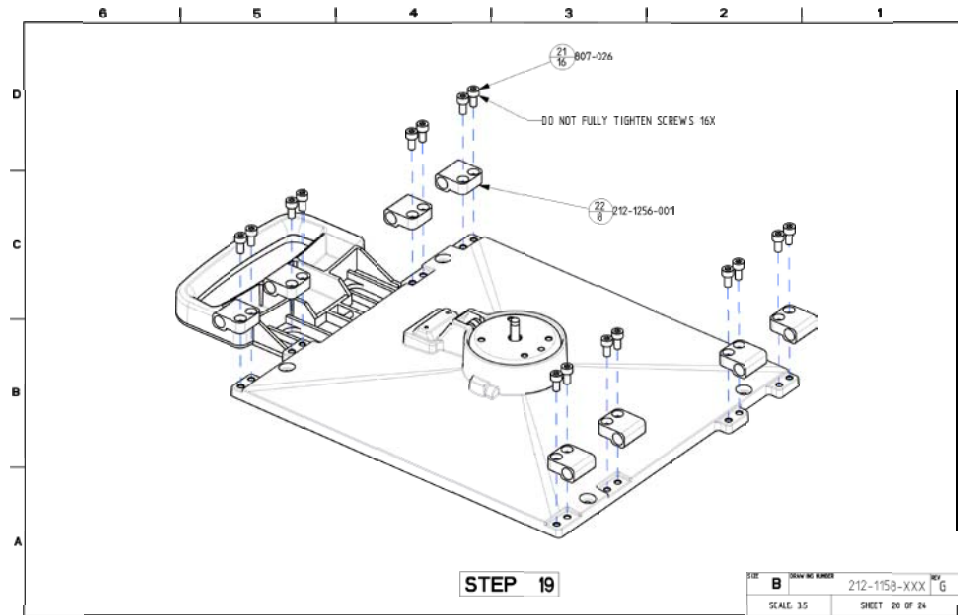
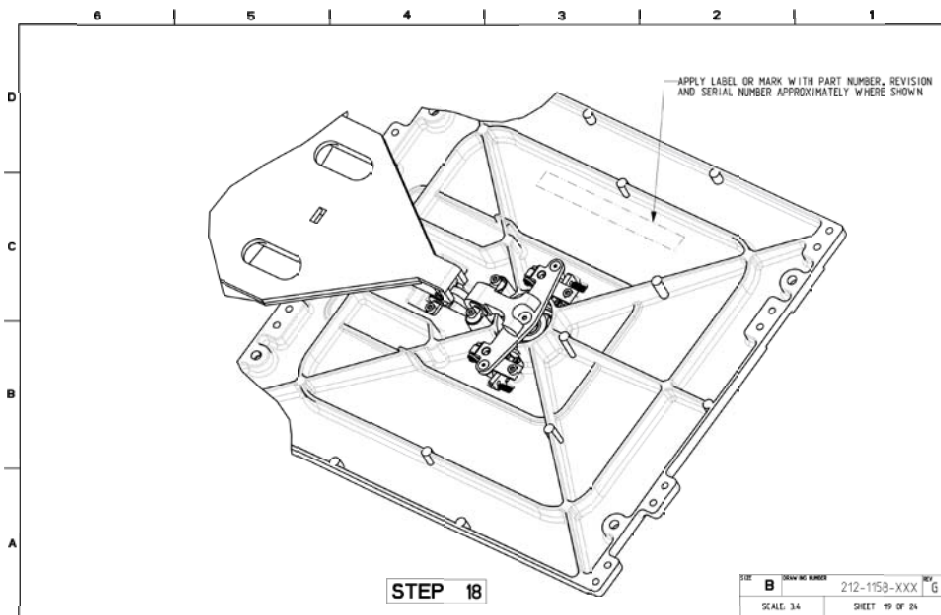
SCALE: 1:1 SHEET 2 OF 24

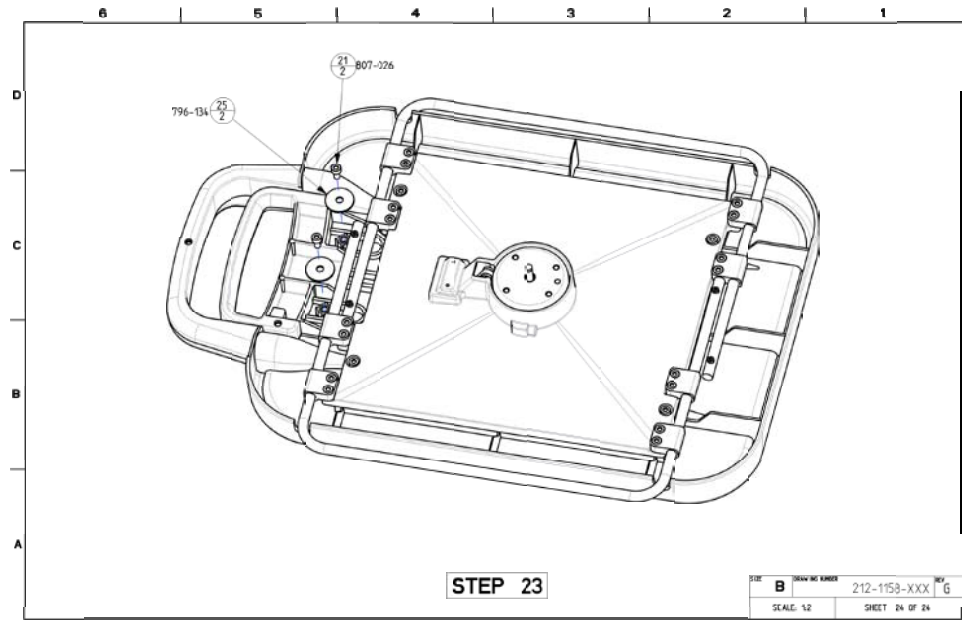
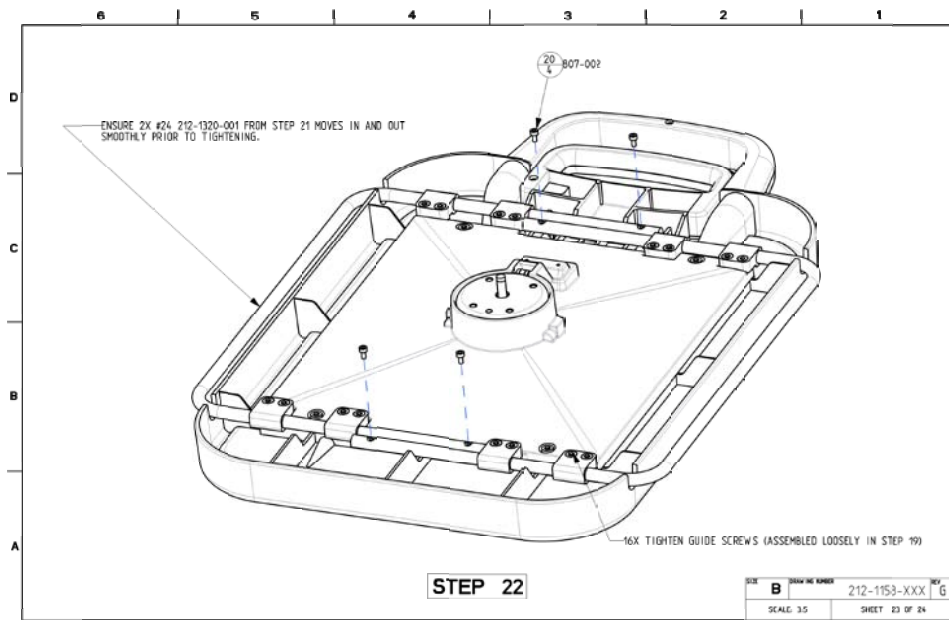












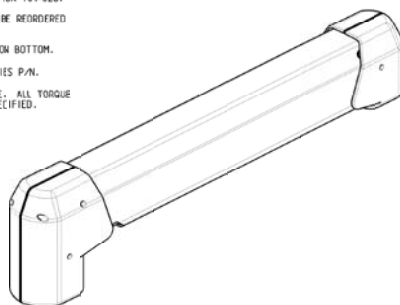
212-1186-501
ASSY, ARM, UPPER

ITEM #	PART NUMBER	DESCRIPTION	QTY
001	212-3064-001	DISC,FRICTION,HOUSING ASTMD	4
002	212-3052-001	DISC,FRICTION,SHAFT	2
003	212-1365-001	BODY,JOINT,ELBOW MACHINED	1
004	212-1779-001	SPRING,DISC,FRICTION	3
005	212-1781-001	COLLAR,SPRING,DRAG	2
006	674-185	SHIM,1.000X1.500X.020,SST	2
007	600-192	BEARING,40DEG,25X52X15MM	4
008	212-1285-001	BLADE,LOCKING	8
009	212-1298-001	RING,LOCKING	2
010	212-1293-001	SHAFT,ELBOW	1
011	212-1289-001	NUT,HEX,JAM M24 SST	4
012	212-1312-001	PUSHROD,ELBOW	1
013	603-027	BEARING,NYLINER,.188 DIA	4
014	212-3445-001	LEVER ASSY,CABLE,ELBOW	1
015	212-1366-001	GEAR,LEVER,CABLE	1
016	212-3446-001	LINK ASSY,ELBOW/SHLDR	2
017	212-1367-001	SHAFT,LEVER,CABLE ELBOW	1
018	817-738	SETSCREW,FLATPOINT,M4X6 SST	4
019	603-033	BEARING,FLANGE,NYLINER .313DIA	2
020	212-1311-001	LEVER,MAIN,ELBOW	1
021	212-1313-001	SHAFT,LEVER,MAIN ELBOW	1
022	212-3442-001	LEVER ASSY,ACTUATOR,ELBOW	2
023	773-092	RING,RETAINING,EXT .125 DIA	12
024	212-3587-001	ACTUATOR,BRAKE,OUTBRD	2
025	212-1296-001	PIN,PIVOT,ACTUATOR	8
026	212-3588-001	ACTUATOR,BRAKE,INBOARD	2
027	212-3167-001	SPRING,90 DEG LOCK,TRAY	4
028	212-3447-001	LINK,ACTUATOR	4
029	817-739	SETSCREW,FLATPOINT,M4X12 SST	4
030	212-2818-001	SCREW,SHOULDER,M4X0.7	4
031	212-1370-001	CABLE ASSY,ARM,UPPER	1
032	807-002	SCREW,CAP HD SKT,M3X6 SST	11
033	212-3433-001	BRACKET,CABLE,ELBOW	1

ITEM #	PART NUMBER	DESCRIPTION	QTY
034	212-1351-001	BODY ASSY,JOINT,SHOULDER MACH	1
035	212-1284-001	SHAFT,SHOULDER	1
039	212-1352-001	SHAFT,LEVER,SHOULDER	1
040	212-3563-001	LEVER ASSY,ACTUATOR,SHLDR	2
042	212-1837-001	GUIDE,COVER,UPPER ARM	4
043	811-010	SCREW,FLAT HD SKT,M4X10 SST	8
044	212-1266-001	LINK,LOWER,4 BAR	1
045	212-3448-001	BLOCK,CABLE,ADJUSTMENT	1
046	674-201	SPRING,GAS,LOCKABLE	1
047	212-2459-001	BLOCK ASSY,RELEASE	1
048	801-003	WASHER,FLAT,M3 SST	2
049	807-003	SCREW,CAP HD SKT,M3X8 SST	2
050	212-1777-001	PIN,BAR,4	4
051	212-1840-001	LINK,TRANSFER,BRAKE SHOULDER	1
052	212-1267-001	LINK,UPPER,4 BAR	1
053	807-026	SCREW,CAP HD SKT,M5X10 SST	1
054	212-2823-001	PIN,M8X20,M5X.8THD ALLOY ST	1
055	212-2245-001	PLATE,ACCESS,CABLE	1
056	809-001	SCREW,BTN HD SKT,M3X6 SST	1
057	212-1268-002	COVER,ELBOW,LEFT MOLDED	1
058	212-1374-002	COVER,ELBOW,RIGHT MOLDED	1
060	805-183	SETSCREW,SKT HD,CONE M4X4 SS	15
061	212-1269-002	COVER,SHOULDER,LEFT MOLDED	1
062	212-1375-002	COVER,SHOULDER,RIGHT MOLDED	1
063	814-006	SCREW,SHLDR,SKT HD M4X4.013 SS	2
065	212-3051-001	DISK,FRICTION,SHIM	2
066	891-027	LUBRICANT,PFPE/PTFE,8981	AR
067	212-3157-001	SPACER,GAS SPRING,ELBOW	2
068	212-3158-001	SPACER,GAS SPRING,SHOULDER	2
069	212-3585-001	ACTUATOR,BRAKE,OUTBOARD LEFT	2
070	212-3586-001	ACTUATOR,BRAKE,INBOARD LEFT	2
AR = As Required			

NOTES: UNLESS OTHERWISE SPECIFIED

1. INTERPRET THIS DRAWING PER ASME Y14.5M AND ALCON SPECIFICATION 701-026.
2. UNLESS OTHERWISE STATED, MANUFACTURING ASSEMBLY STEPS MAY BE REORDERED TO IMPROVE EFFICIENCY.
3. $\left(\frac{X}{Y}\right)$ BALLOON SHOWS ITEM NUMBER (X) ON TOP AND QUANTITY (Y) ON BOTTOM.
4. -5XXS SERIES PART NUMBERS ARE MADE FROM 1 EACH OF -5XX SERIES P/N.
5. * XX IN LBS * - INDICATES TORQUE SPECIFICATION ON HARDWARE. ALL TORQUE TOLERANCES ARE $\pm 10\%$ OF NOMINAL VALUE UNLESS OTHERWISE SPECIFIED.
6. BUILD PER 992-2120-003.



REVISION HISTORY		
REV	ECN	DATE
P23	NOT RELEASED	03/17/08
A	20000049	03/24/08
B	20001288	05/09/08
C	20001539	06/25/08
D	20001999	08/05/08
E	20002122	08/21/08
F	20002665	09/24/08
G	20002850	11/18/08
H	20091307	07/28/09
J	CN023615ECN	21/03/12
K	CN043592ECN	05/22/13
L	CN052334ECN	03/26/14
M	CN056308ECN	07/17/14

TABULATION

PART NUMBER	DESCRIPTION	PART NUMBER	REV	DESCRIPTION
212-1186-501	ASSY.ARM.UPPER	212-1186-501S	M	ASSY.ARM.UPPER SERVICE

SEE SEPARATE PART LIST

QTY	PART NUMBER	DESCRIPTION	MATERIAL/MANUFACTURER	ITEM
BILL OF MATERIAL				
BY	J. ATHERLEY	DATE	12/07/06	
DESIGN	C. RUELAS	DATE	12/07/06	
APPROVED	M. BUCZEK	DATE	12/07/06	
FORM REVISION	2/23/2007			
POM INK MODEL ATTRIBUTES NAME: 212-1186-501.PROD VERSION: M.3				



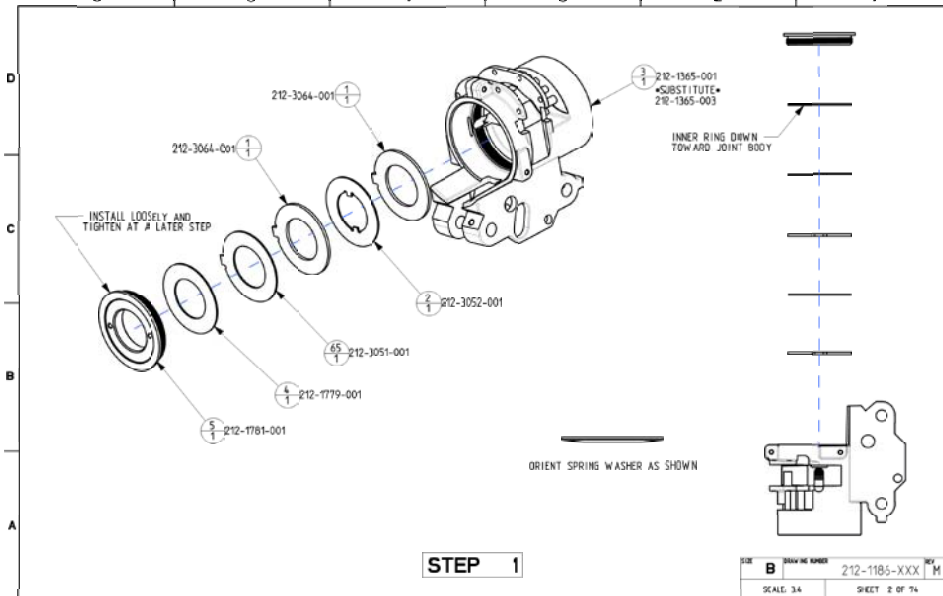
ASSY.ARM.UPPER

SIZE B DRAWING NUMBER 212-1186-XXX REV M

SCALE: 1:2 SHEET 1 OF 74

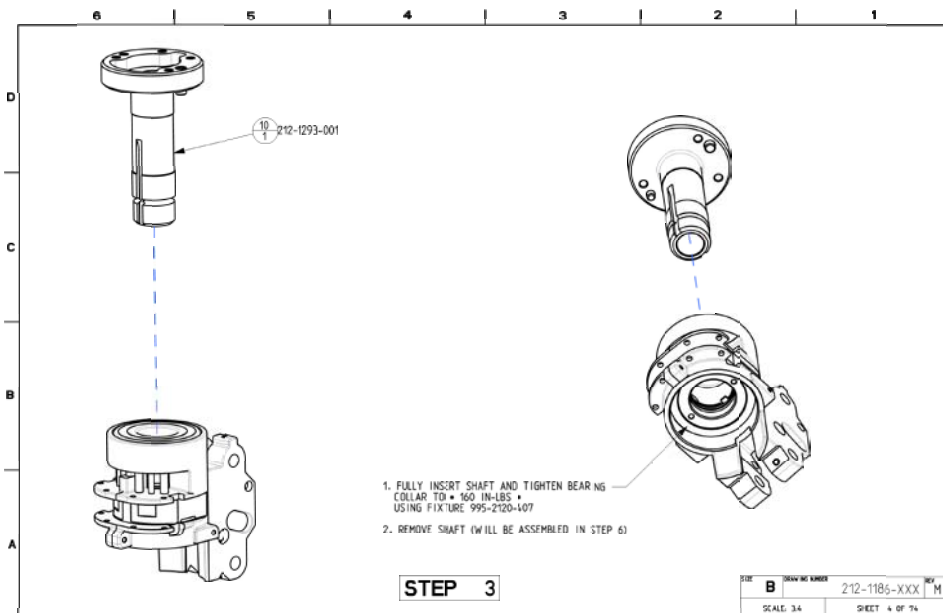
STEP 2

SIZE B	DRAWING NUMBER	212-1186-XXX	REV M
SCALE: 1:1	SHEET	3 OF 74	



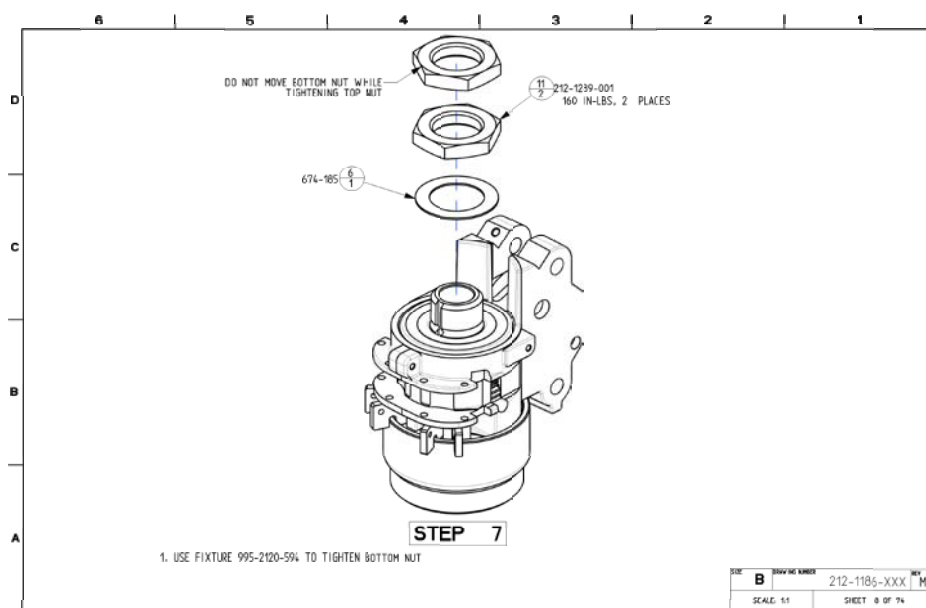
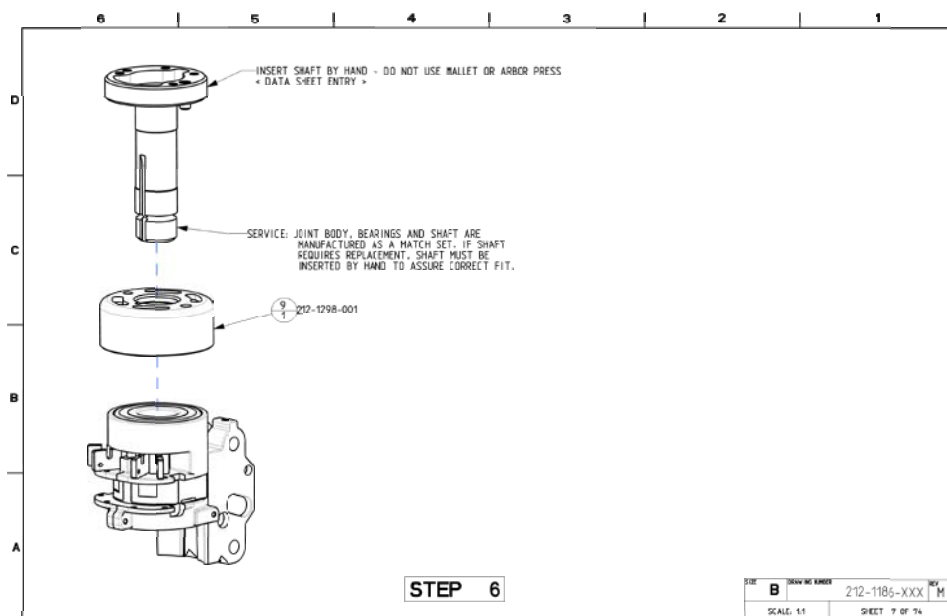
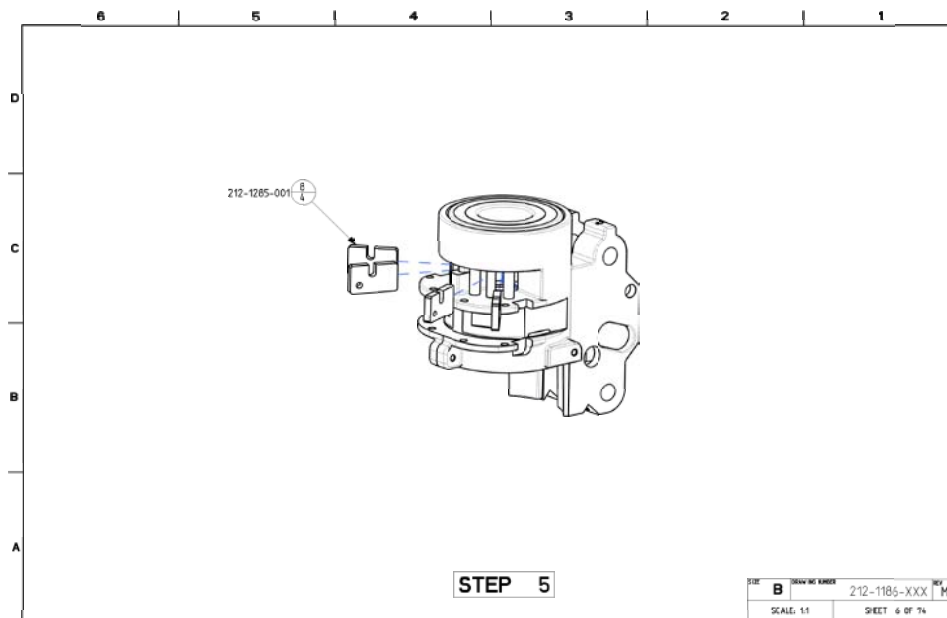
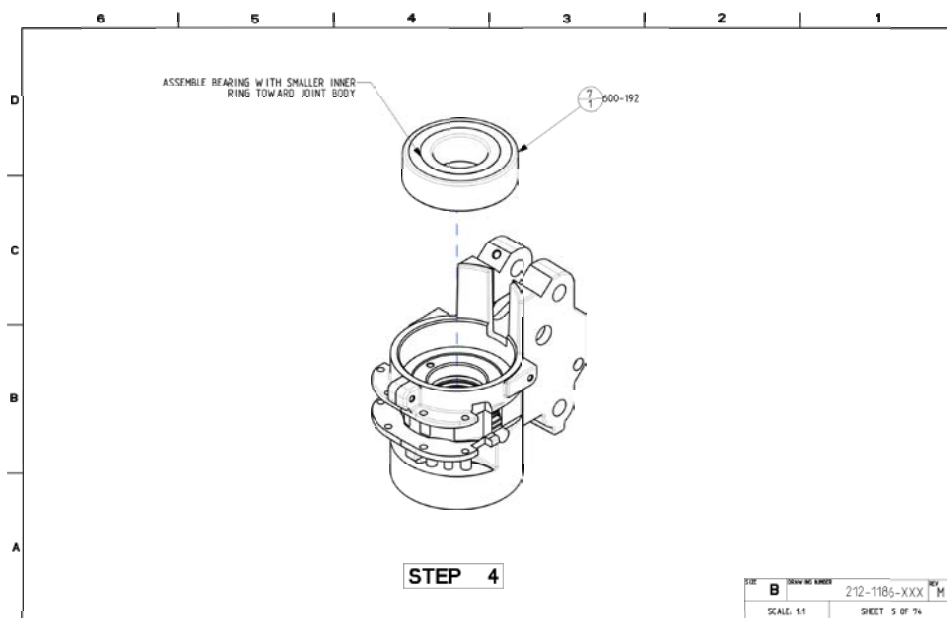
STEP 1

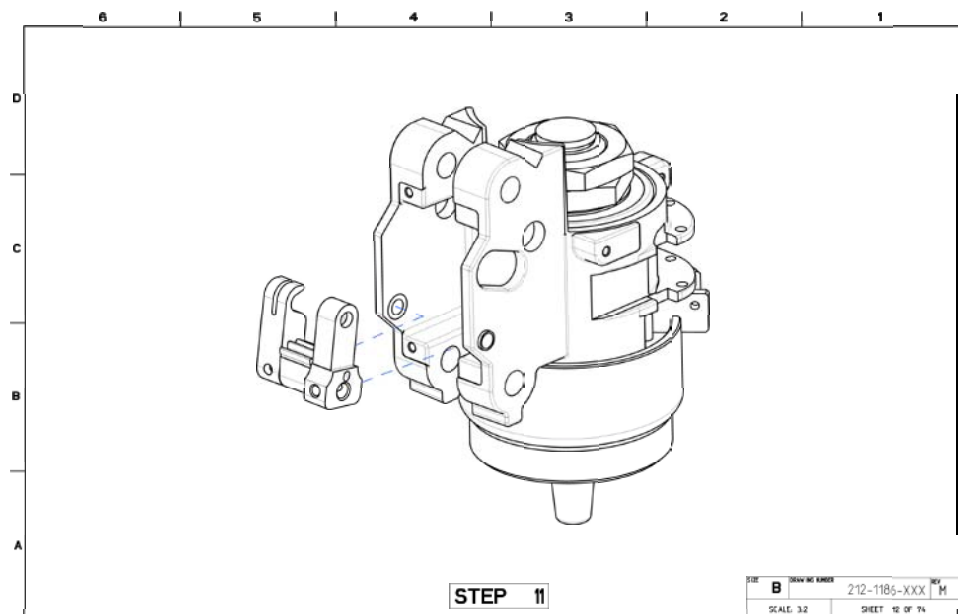
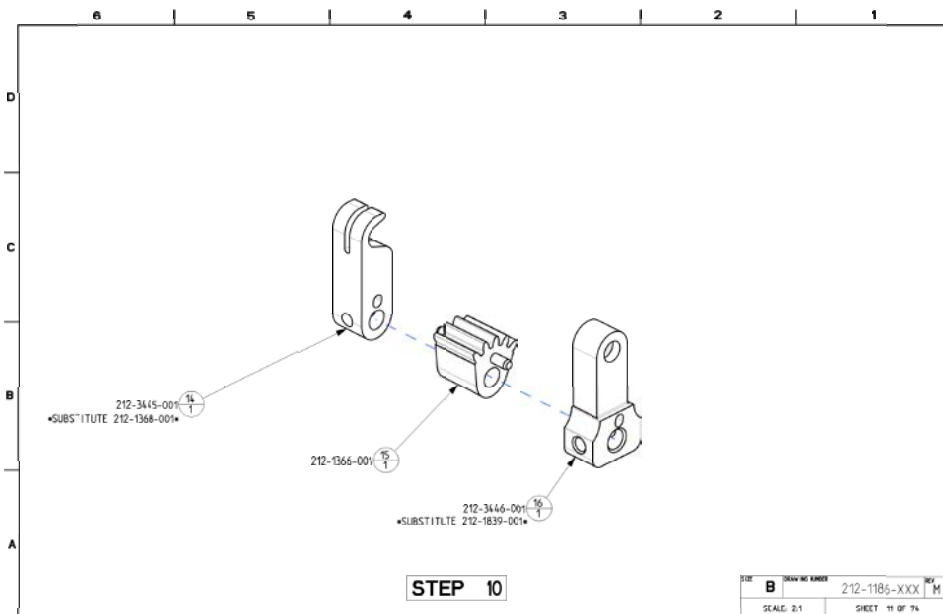
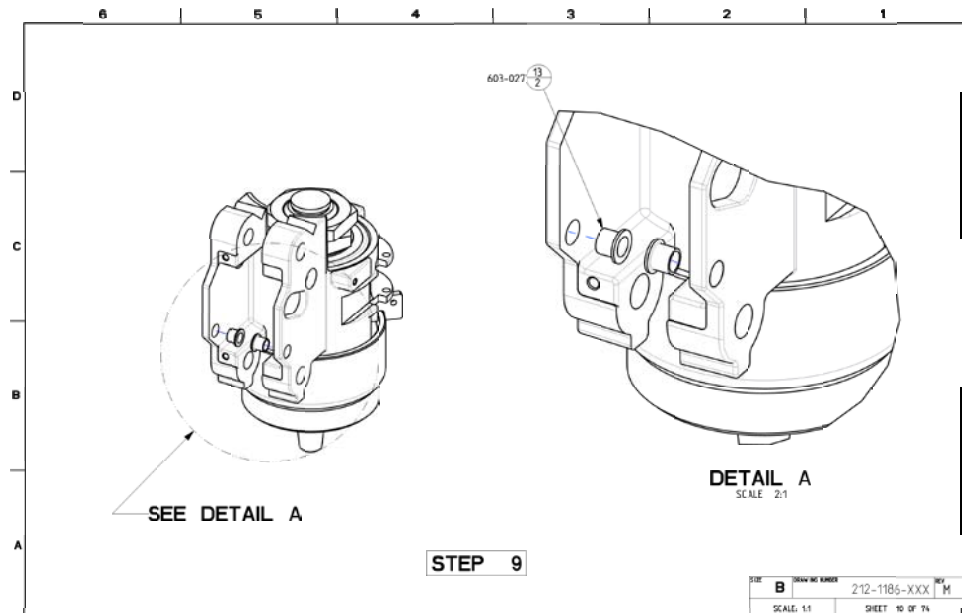
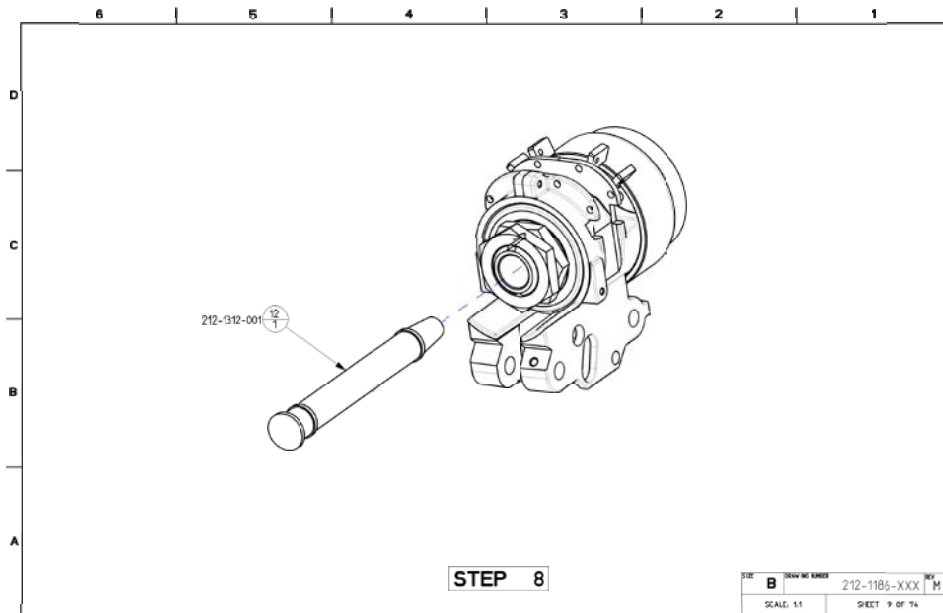
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SCALE: 3:4	SHEET	2 OF 74	

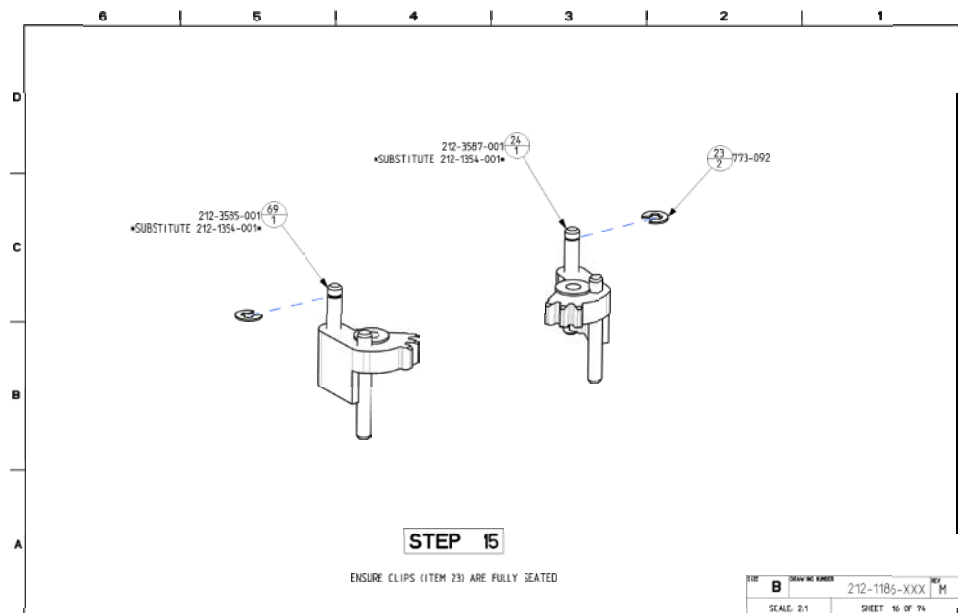
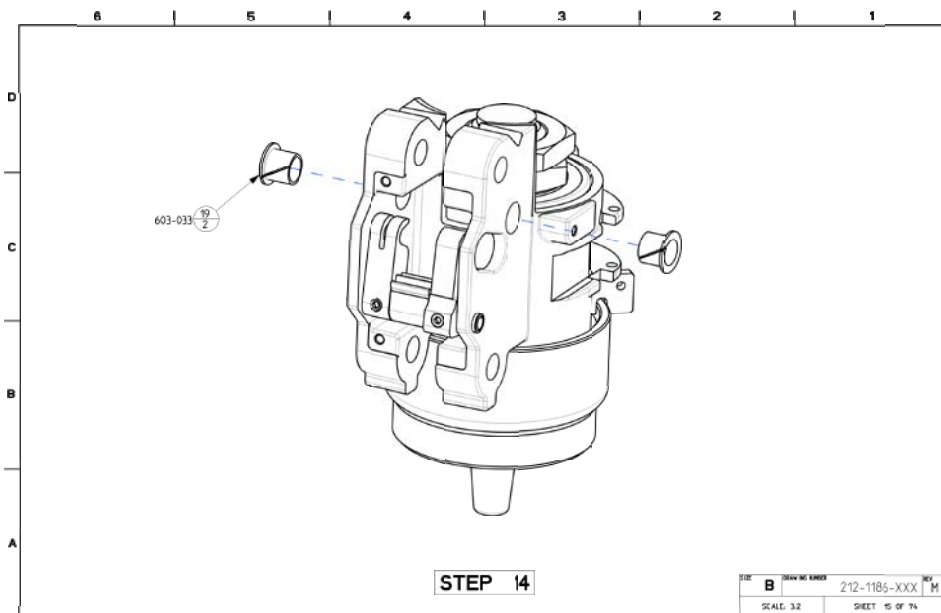
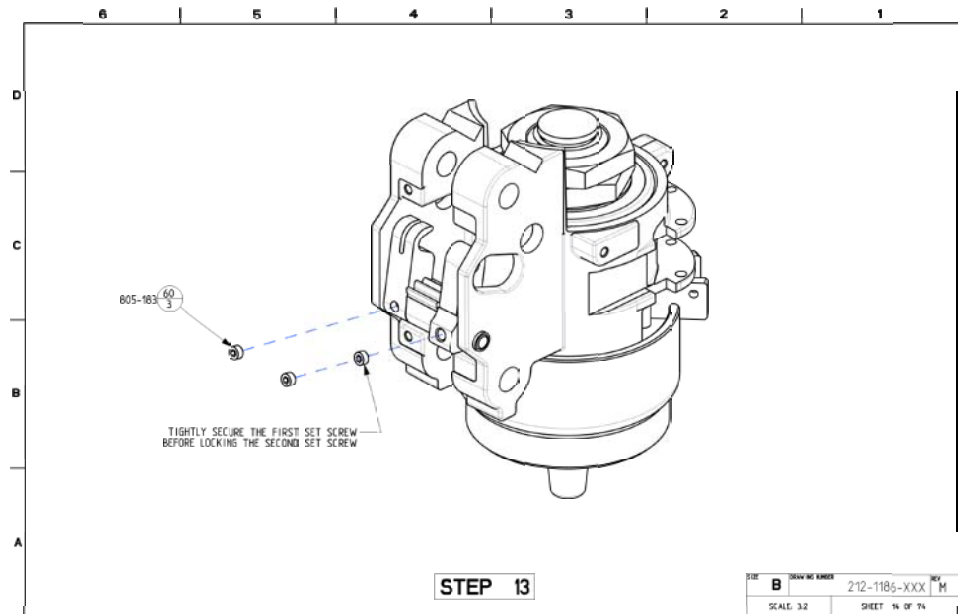
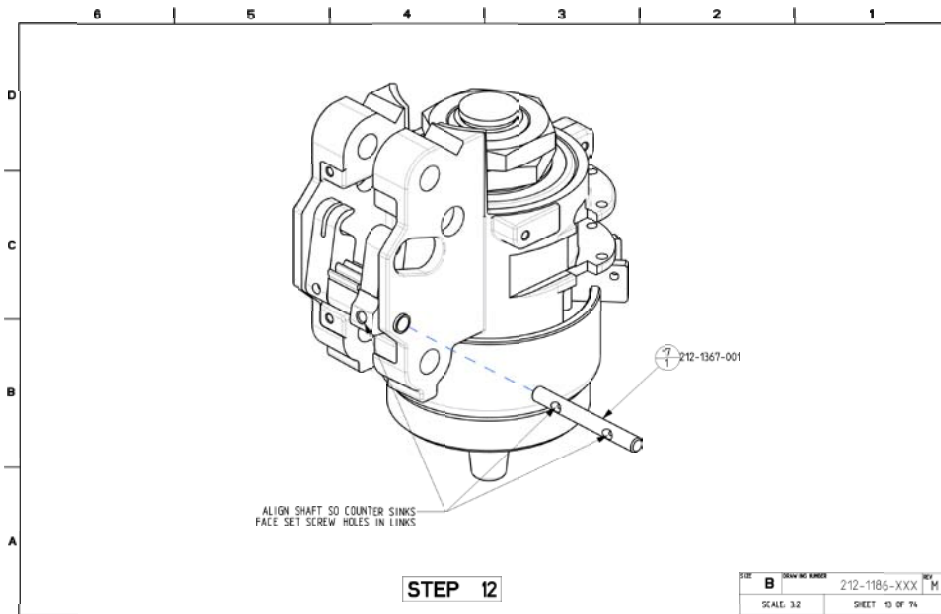


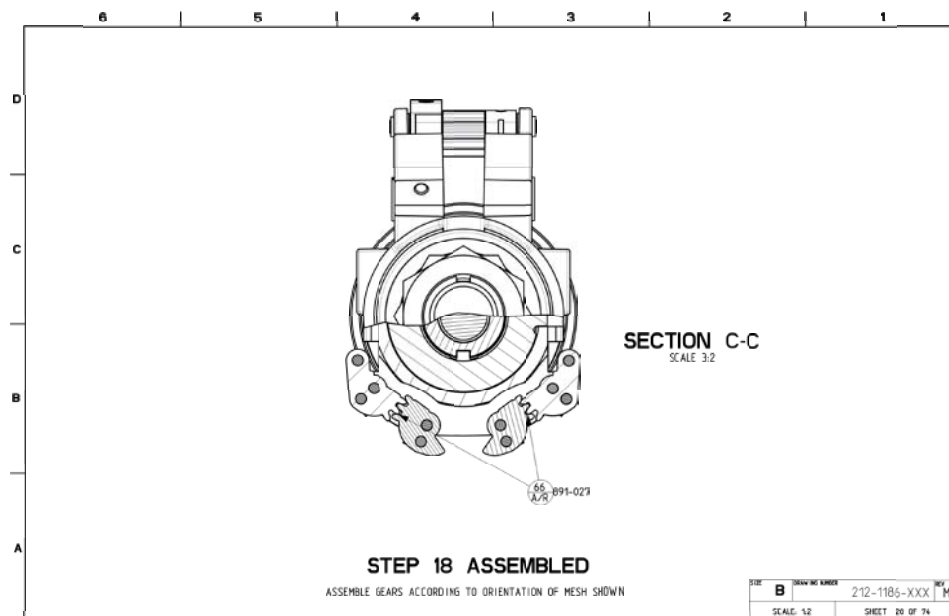
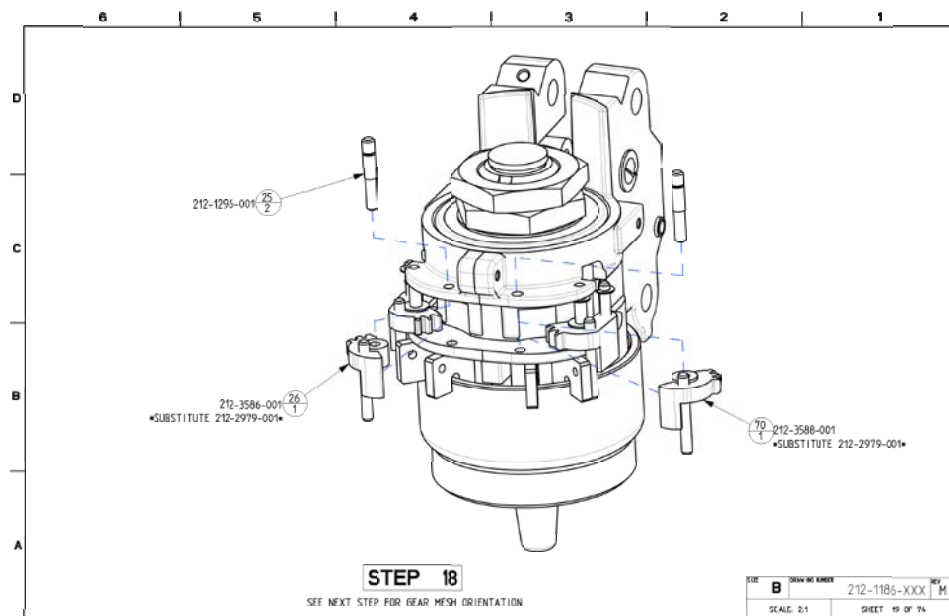
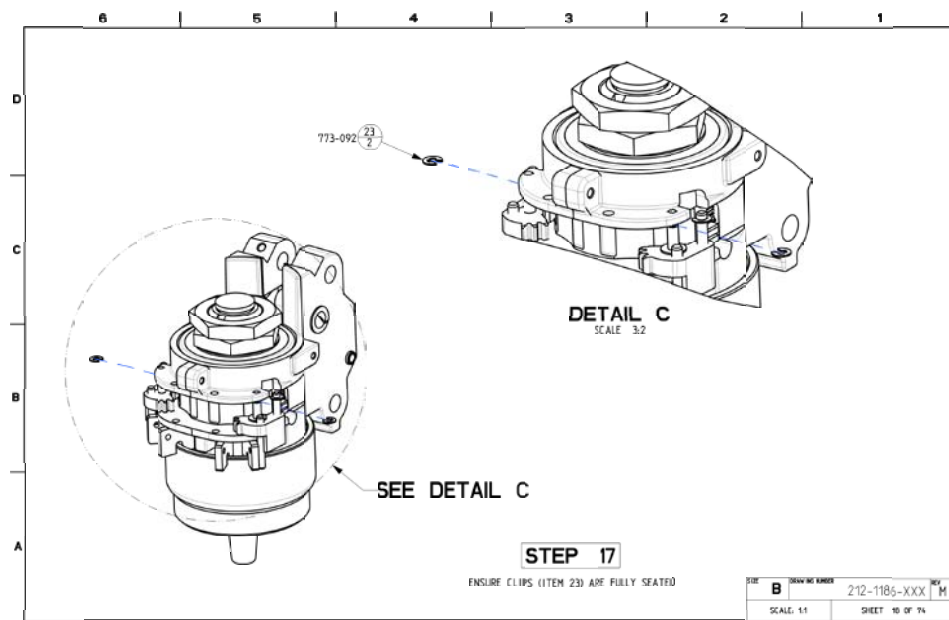
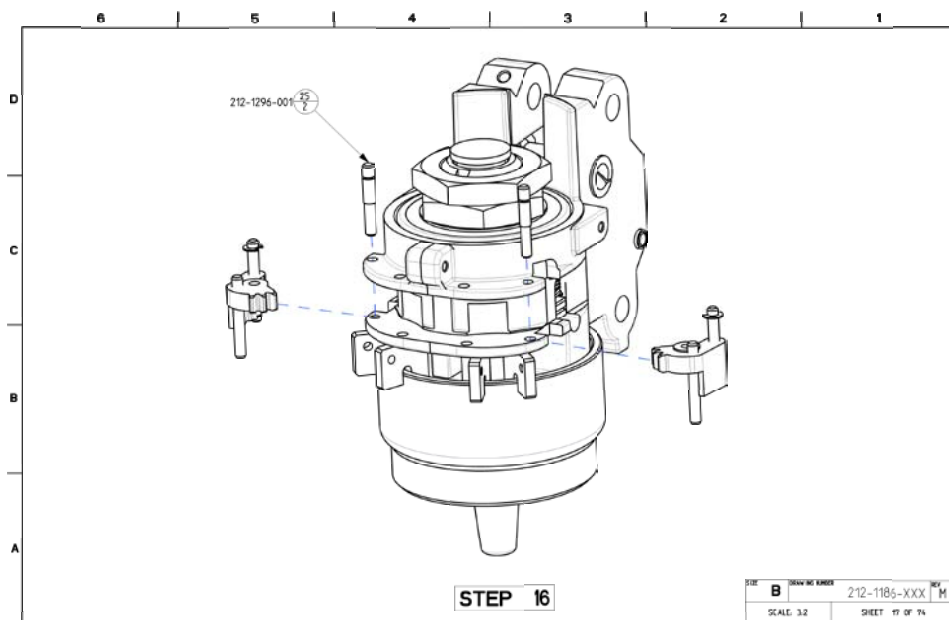
STEP 3

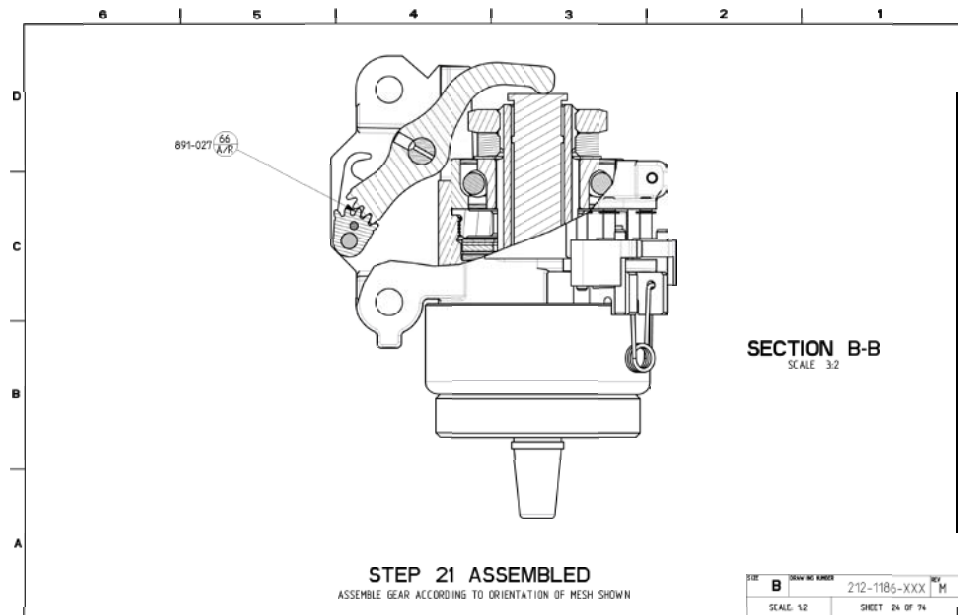
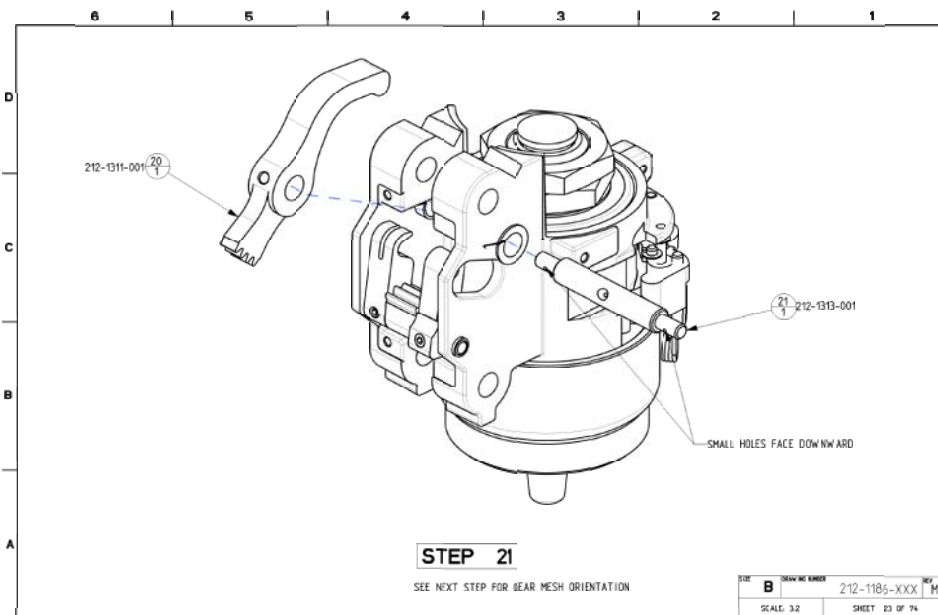
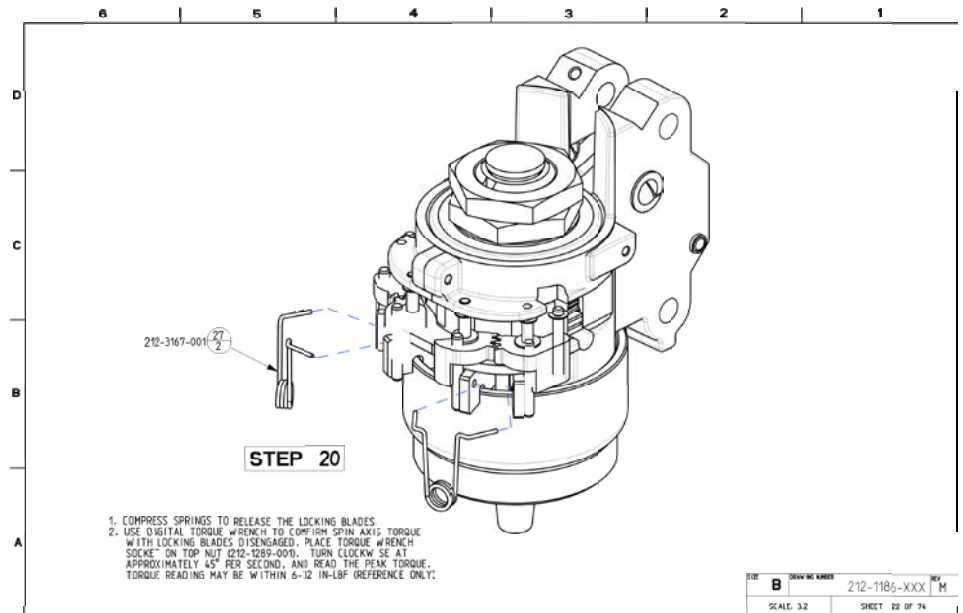
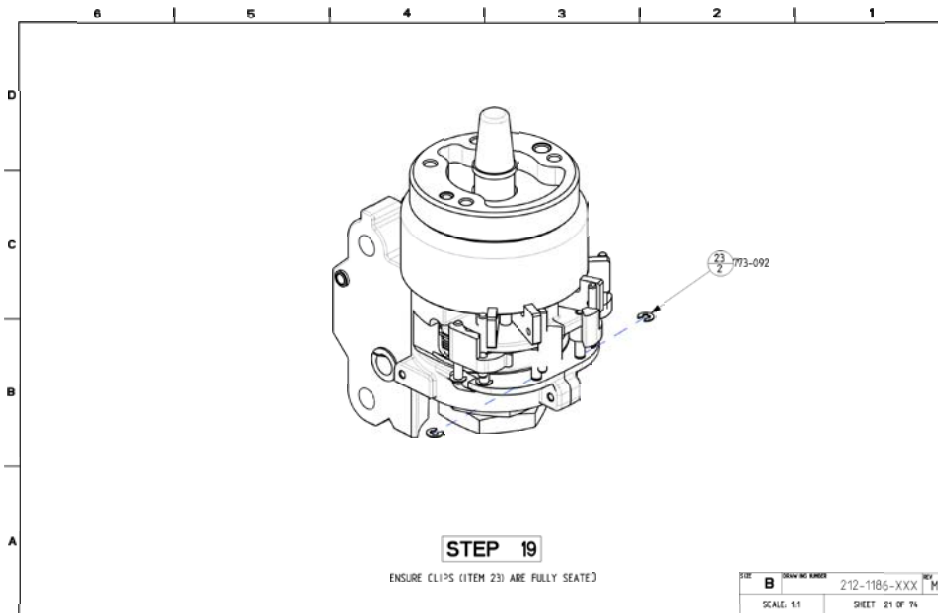
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SCALE: 3:4	SHEET	4 OF 74	

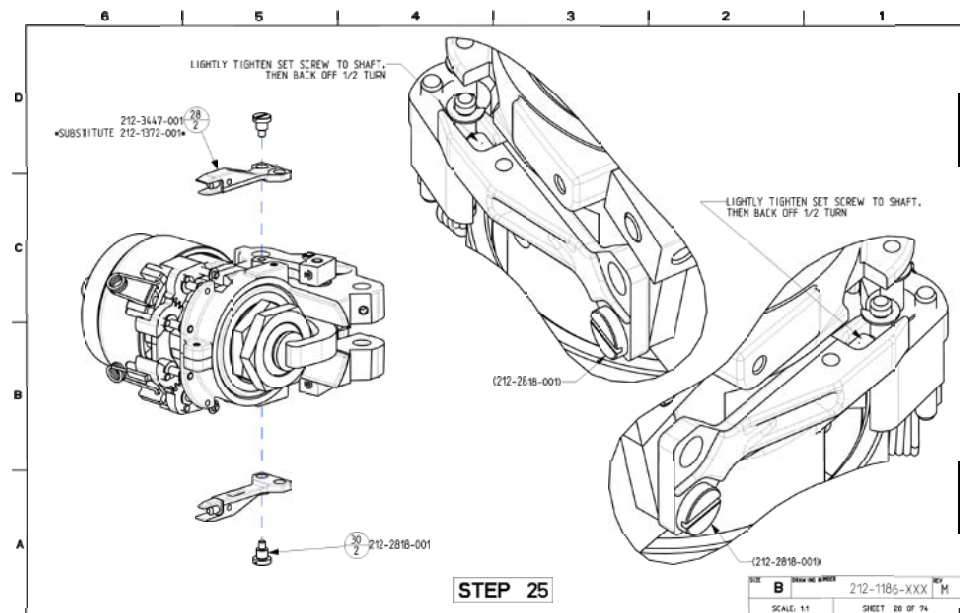
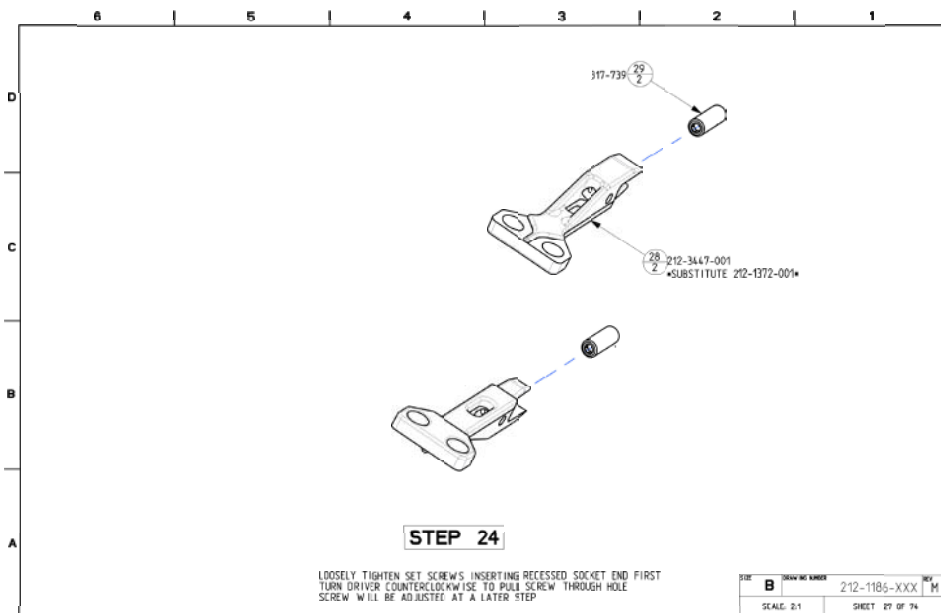
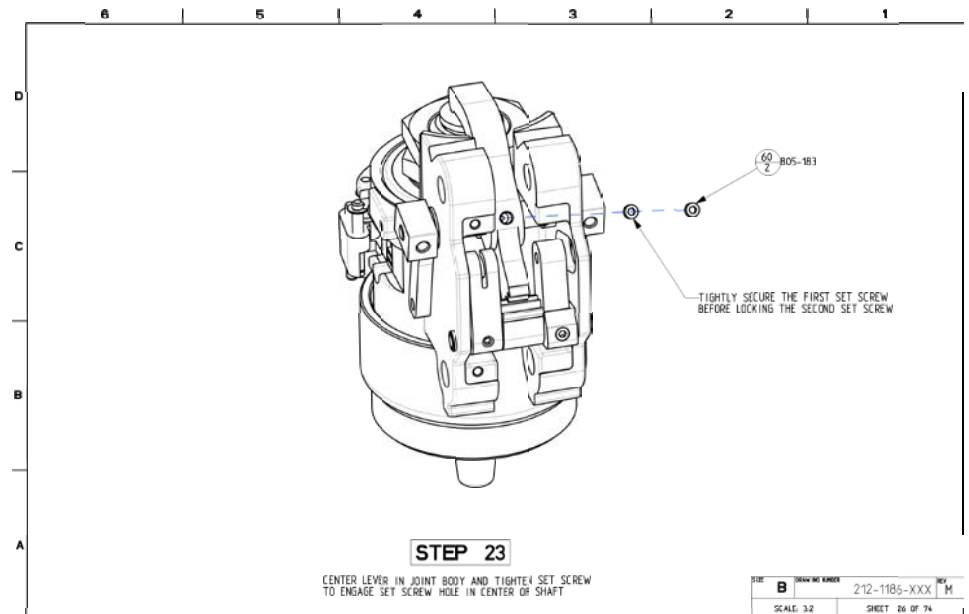
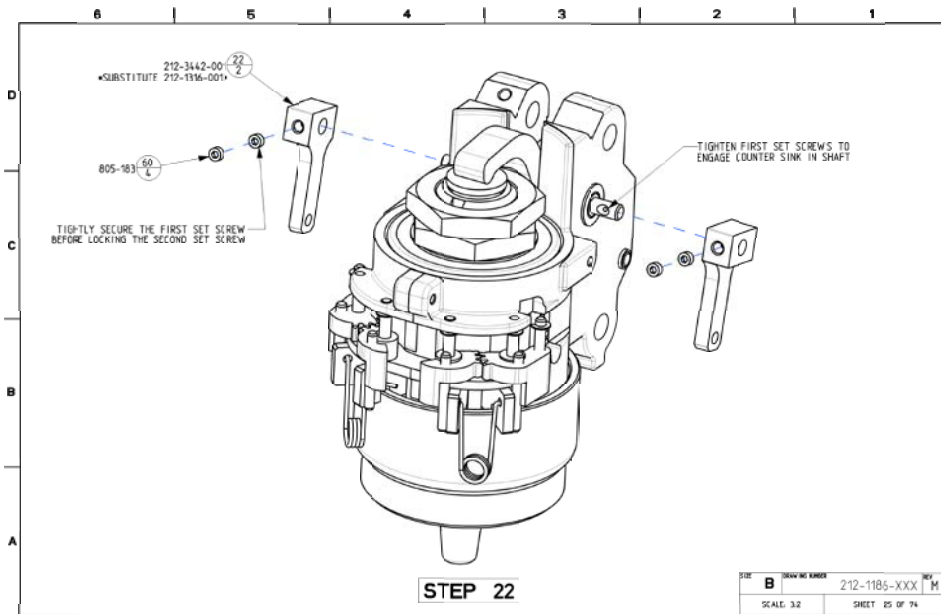


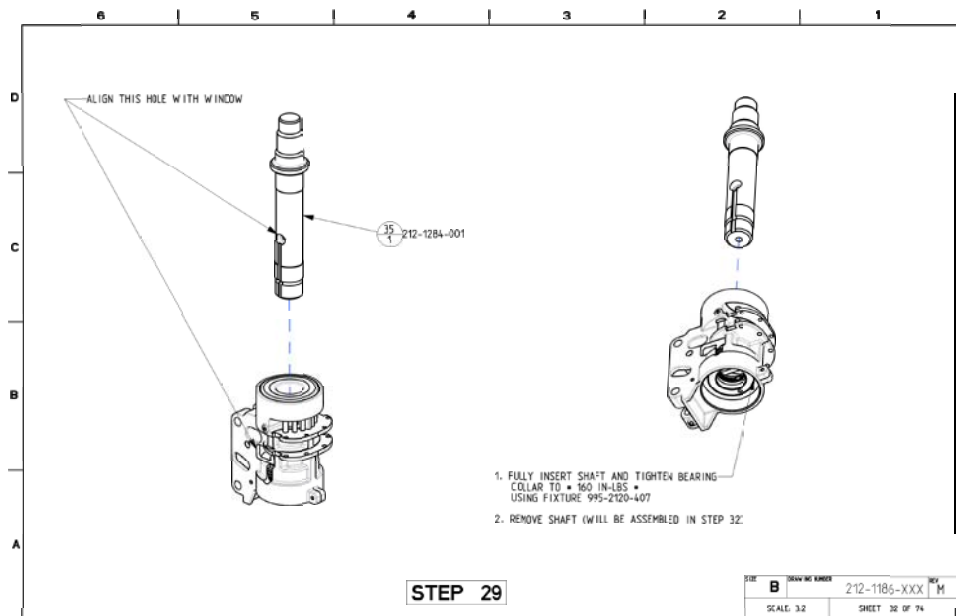
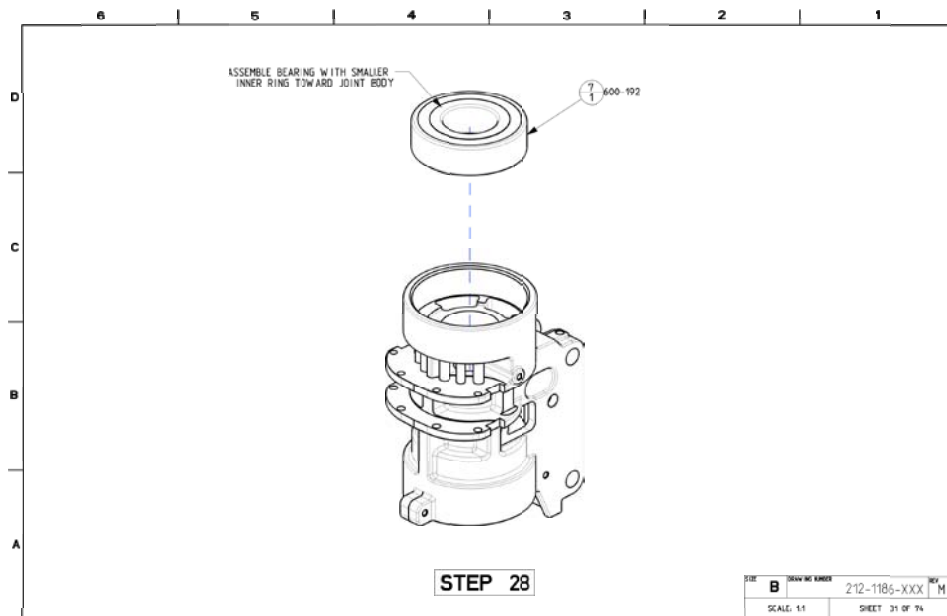
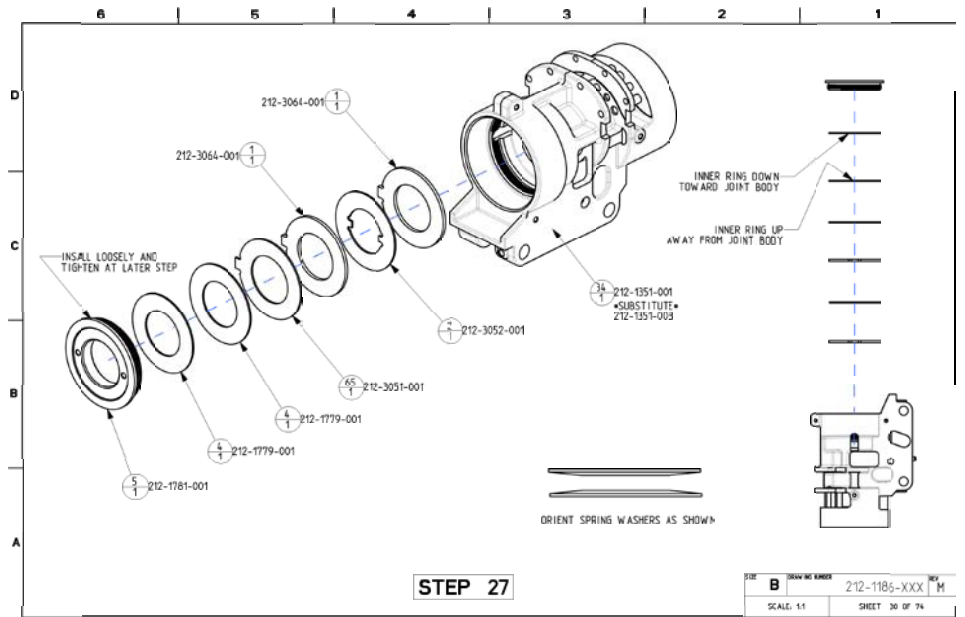
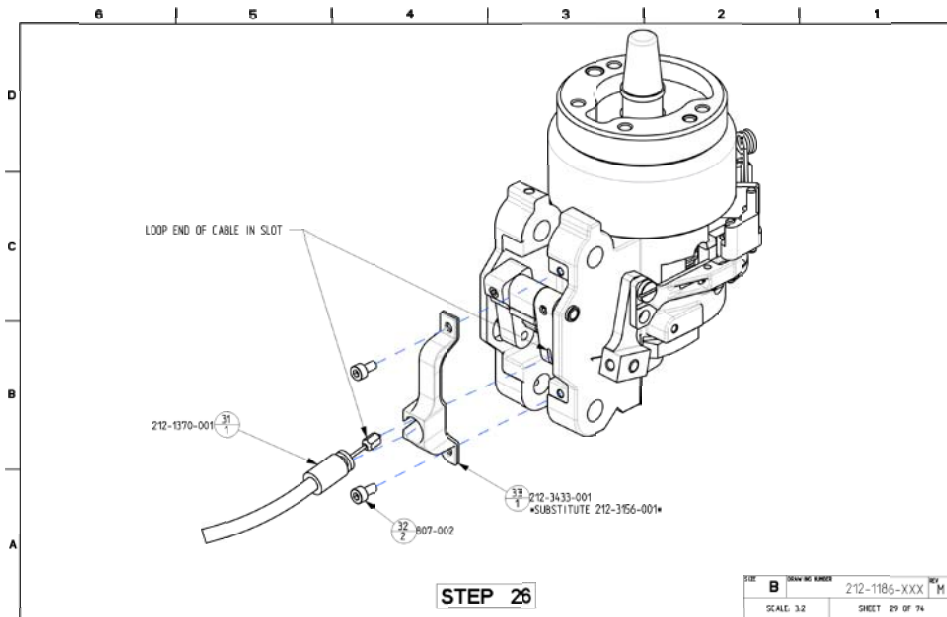


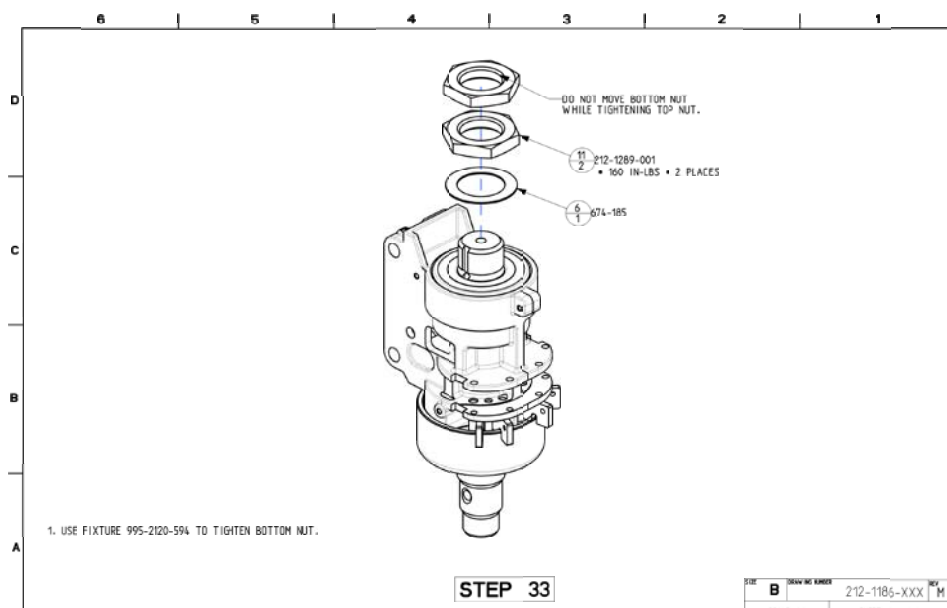
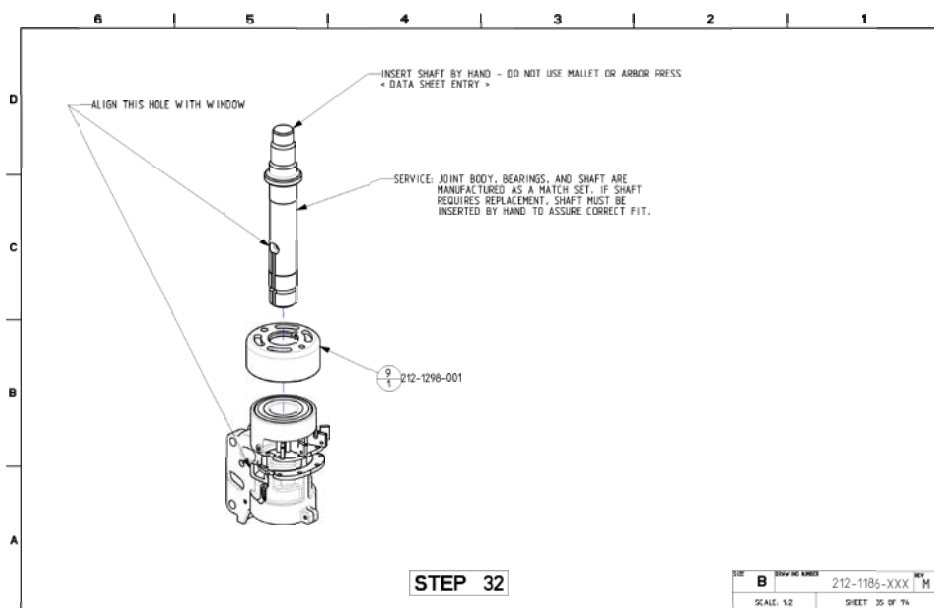
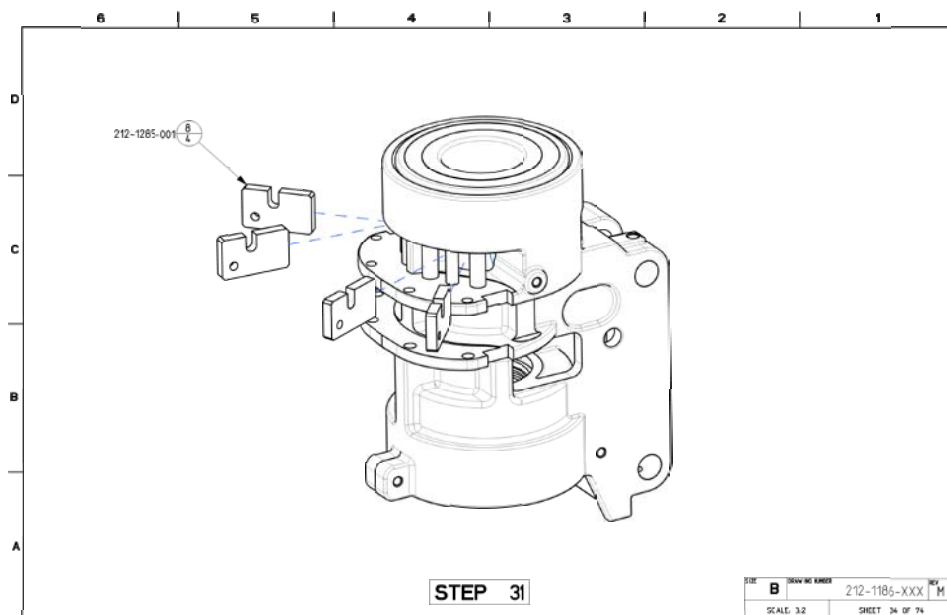
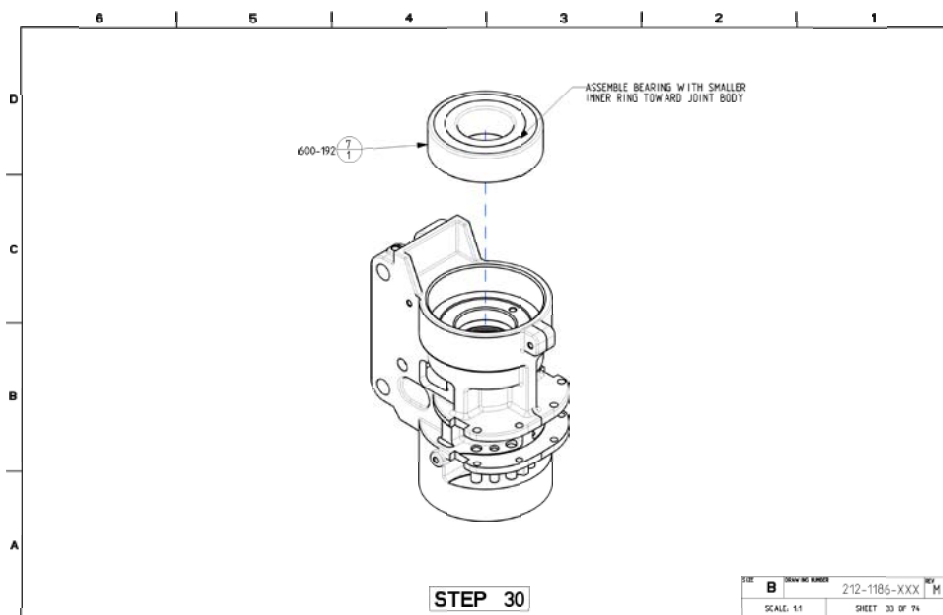


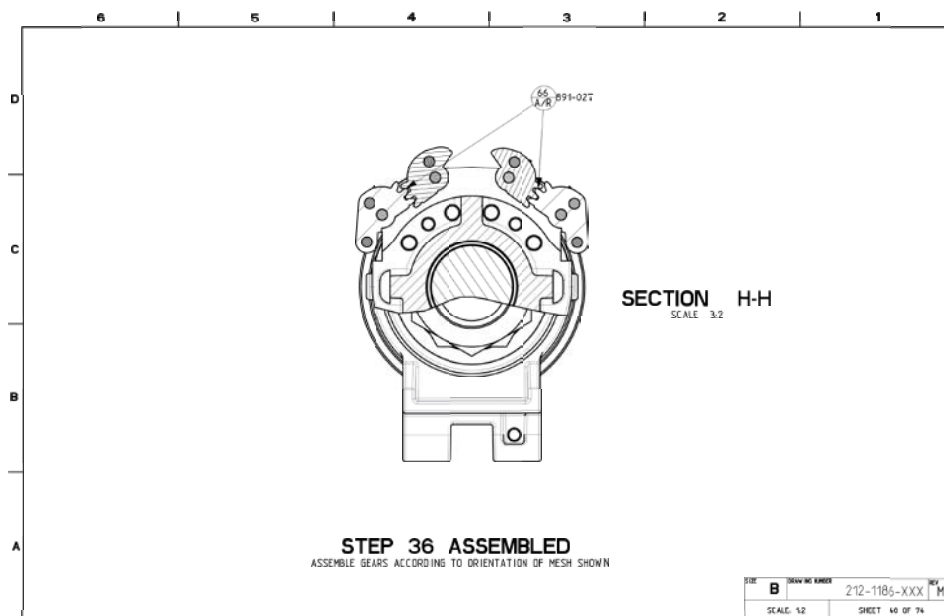
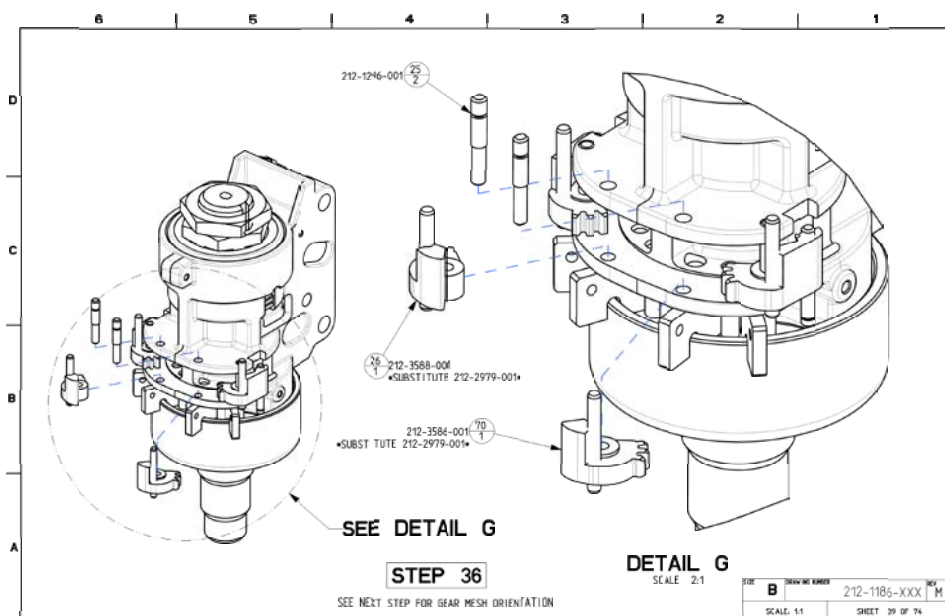
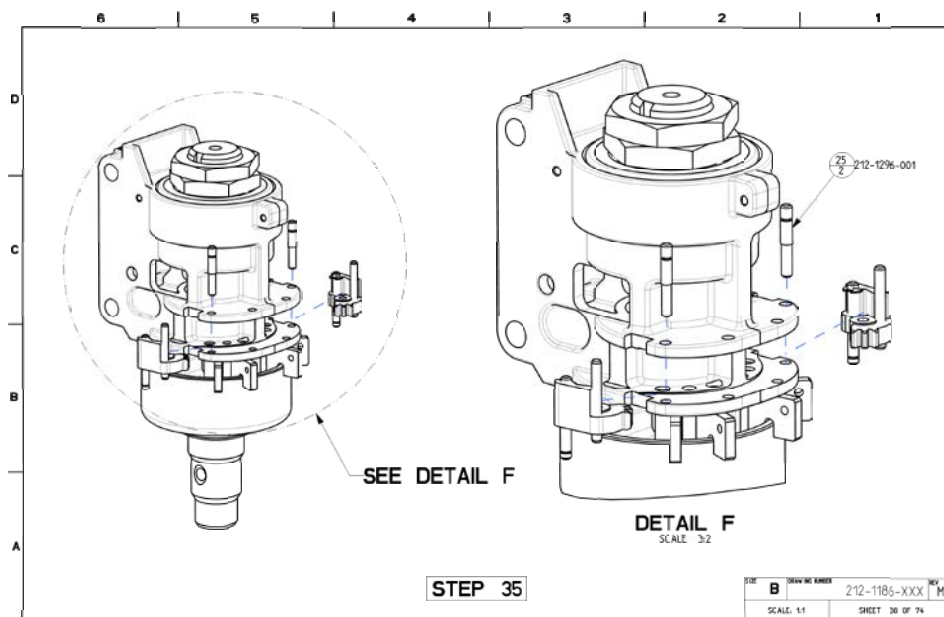
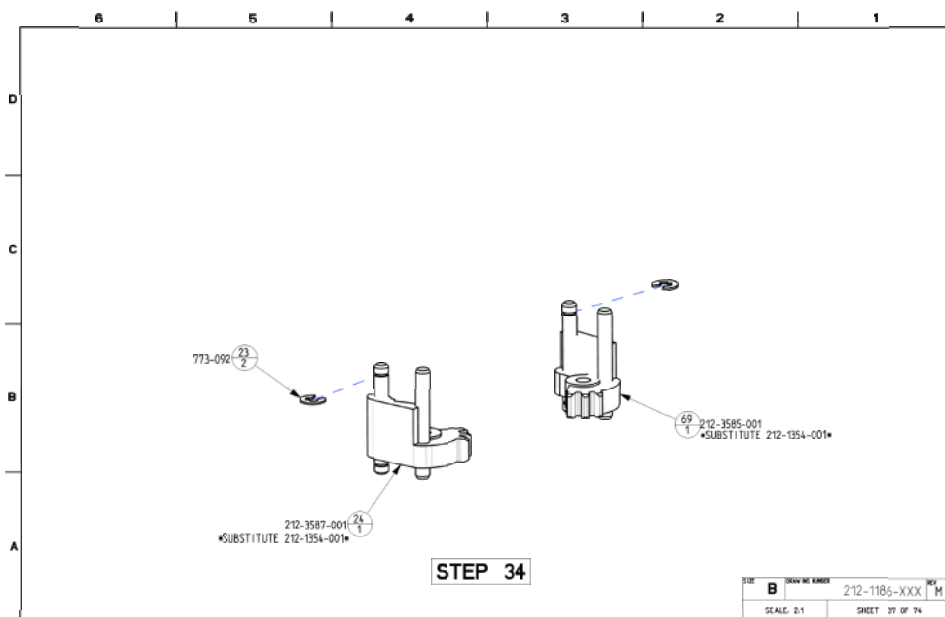


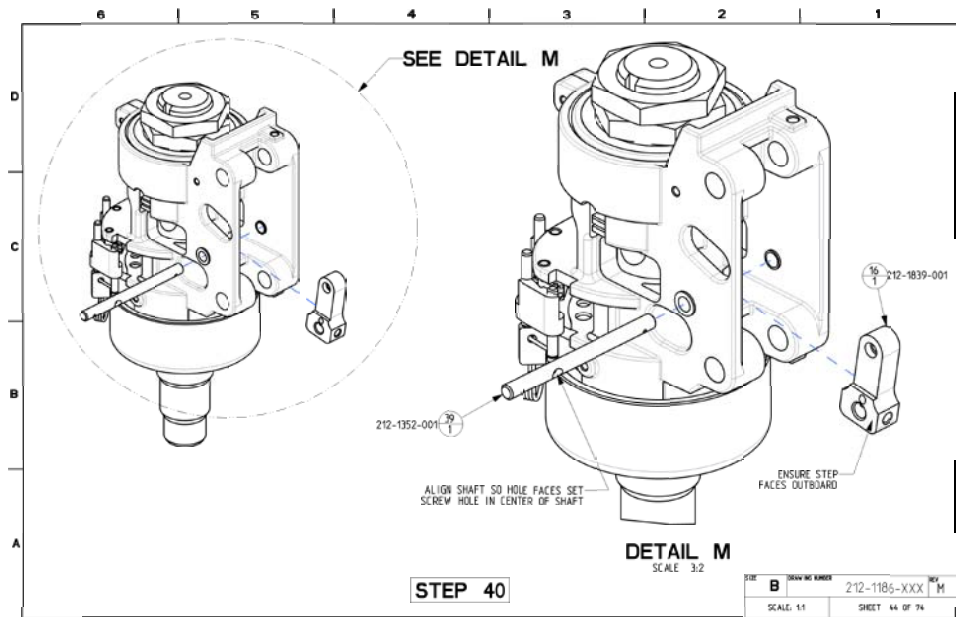
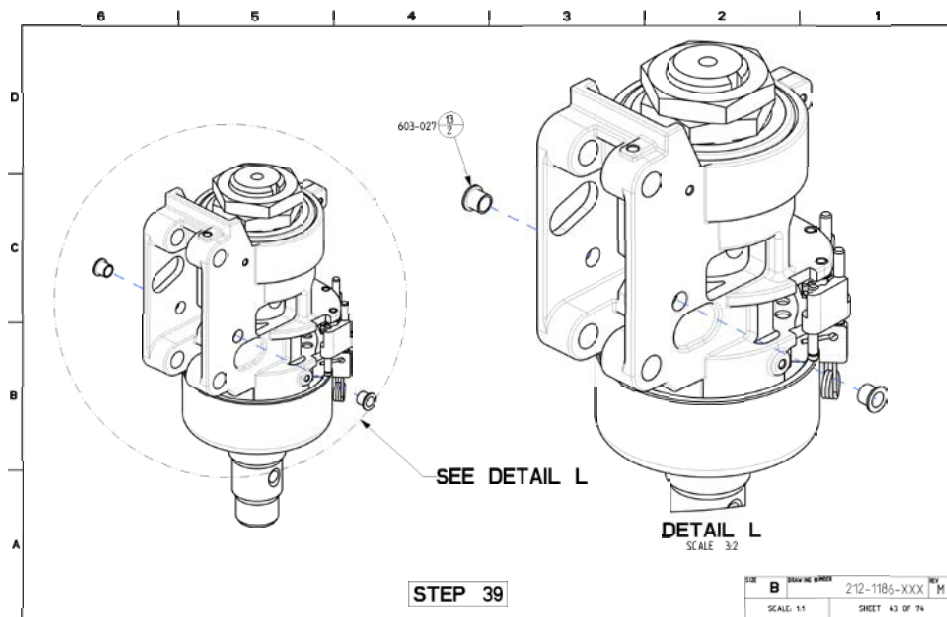
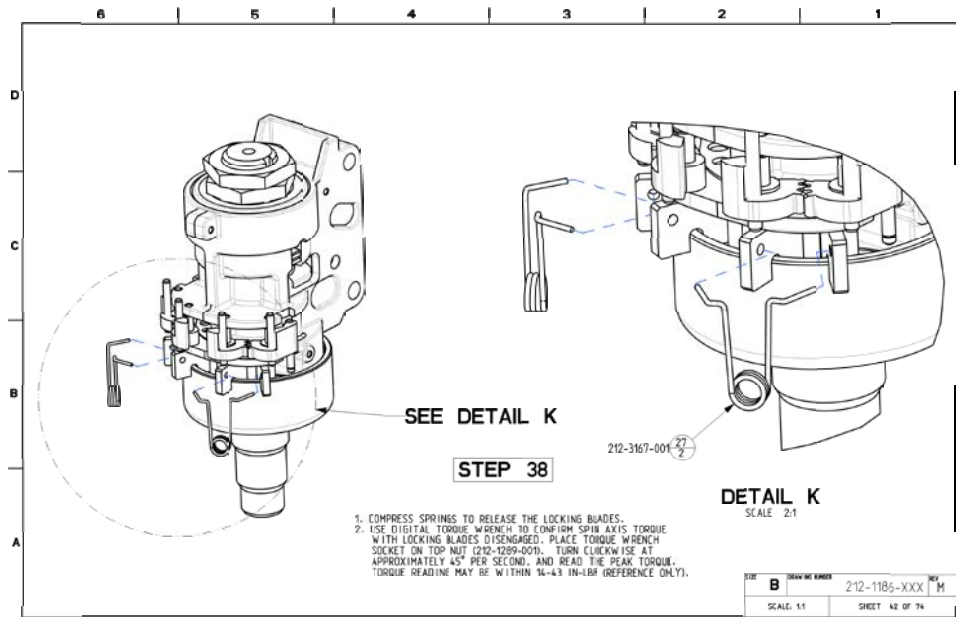
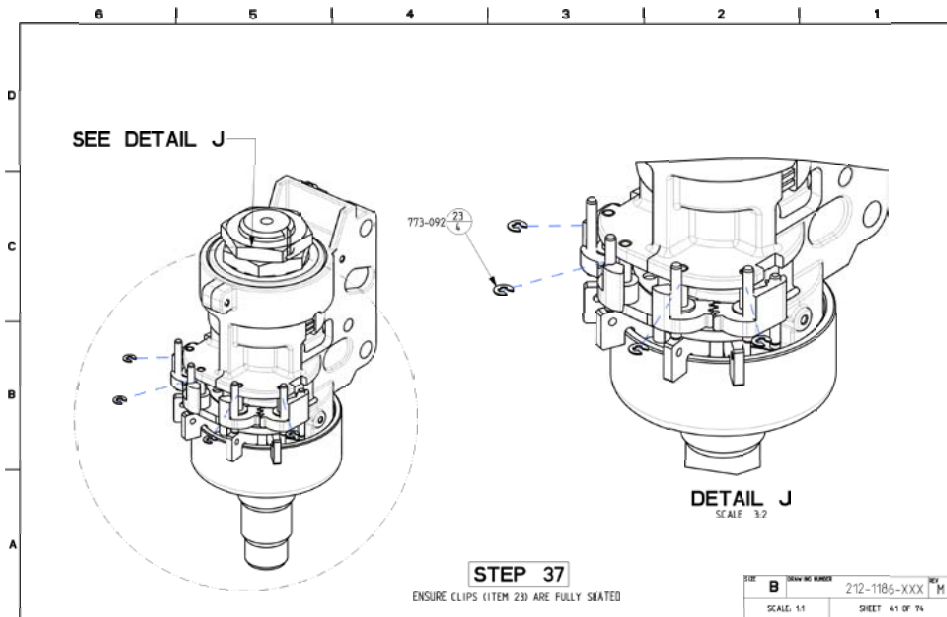


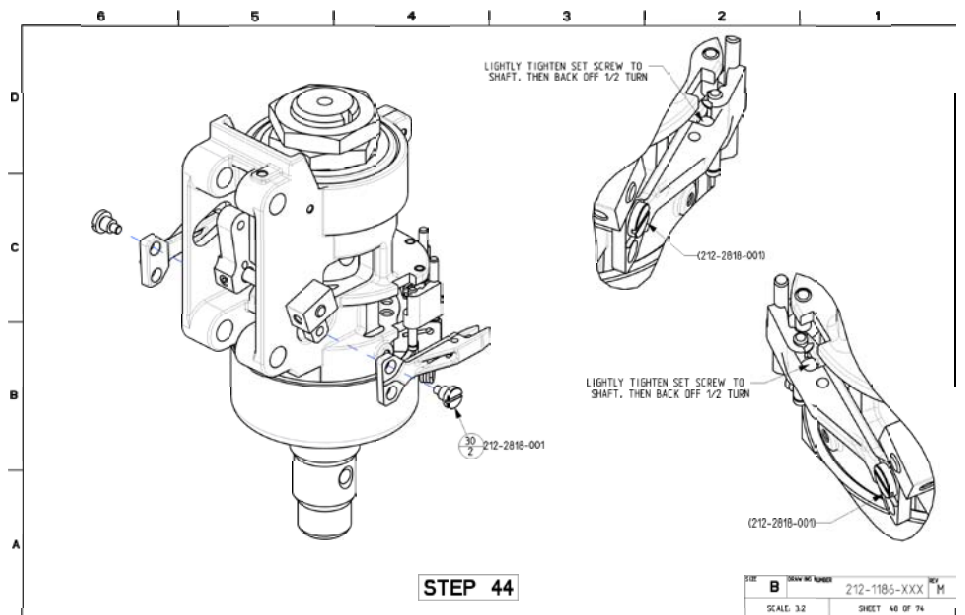
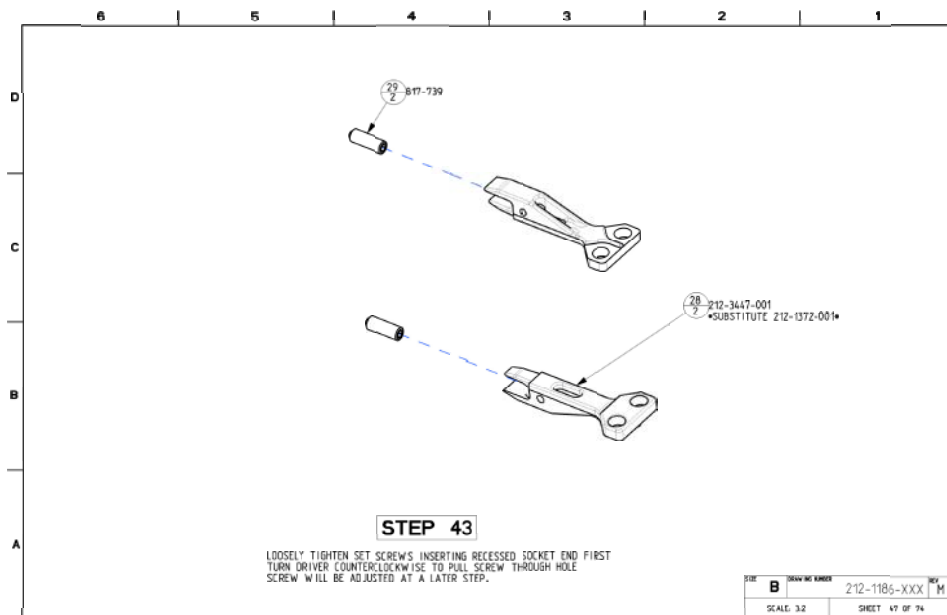
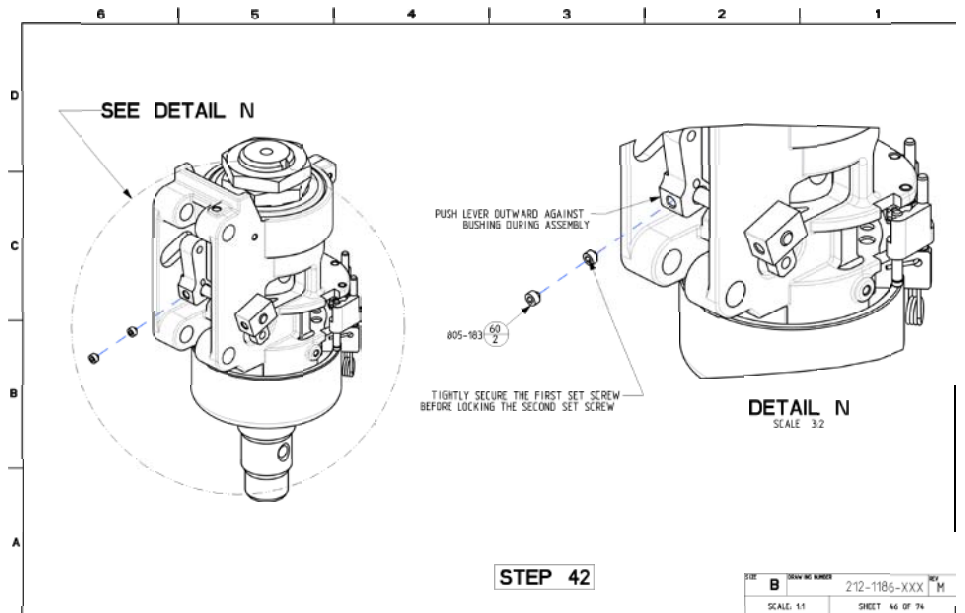
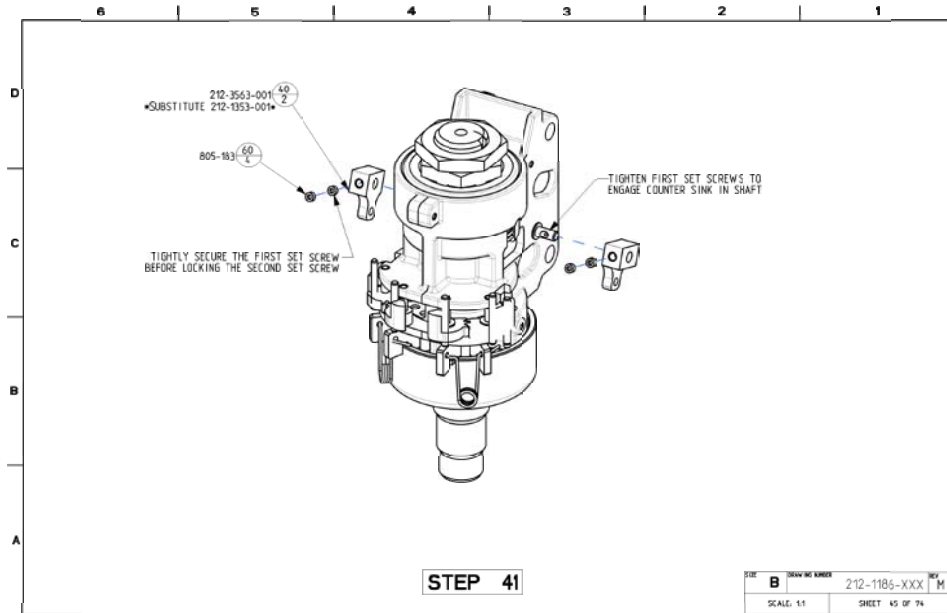


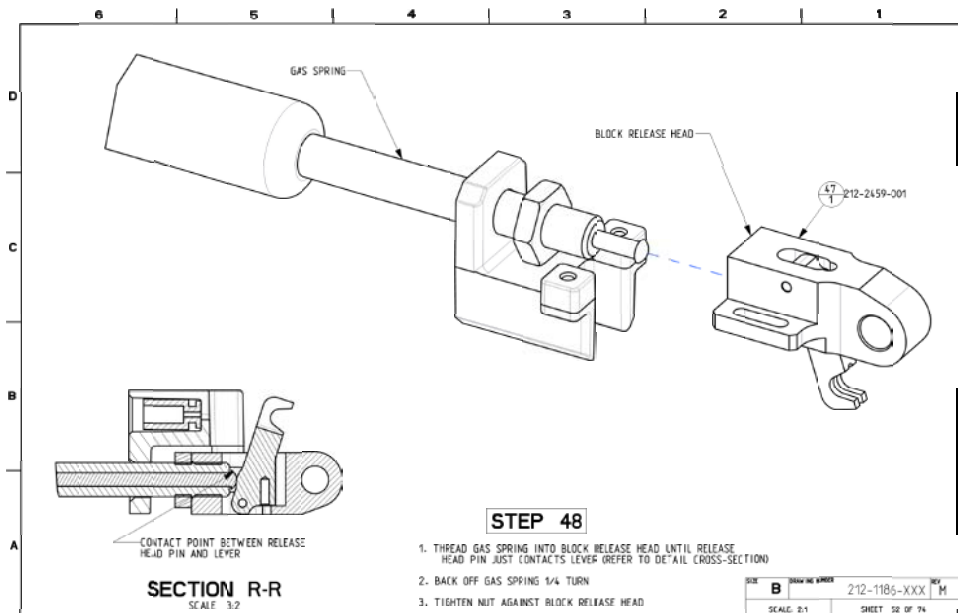
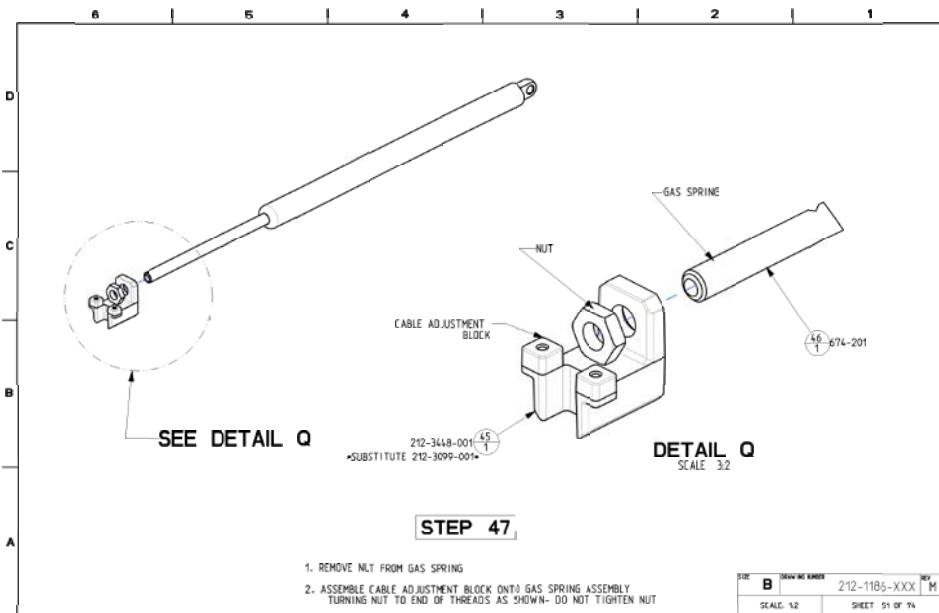
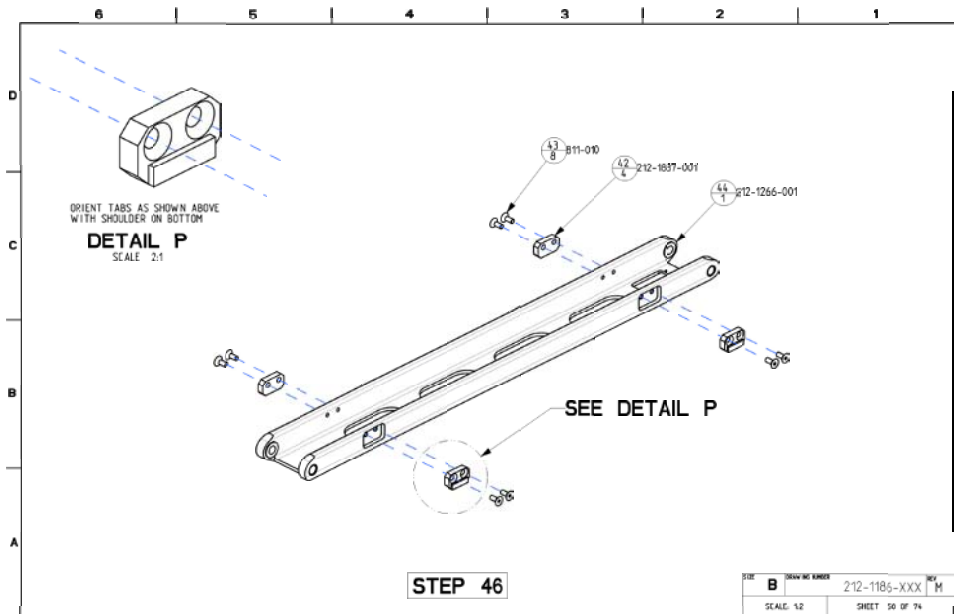
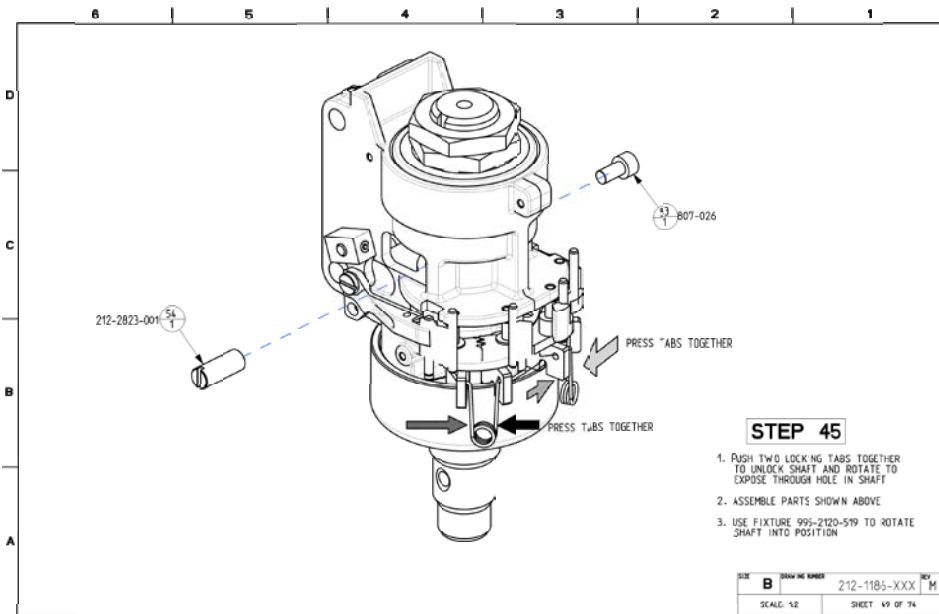


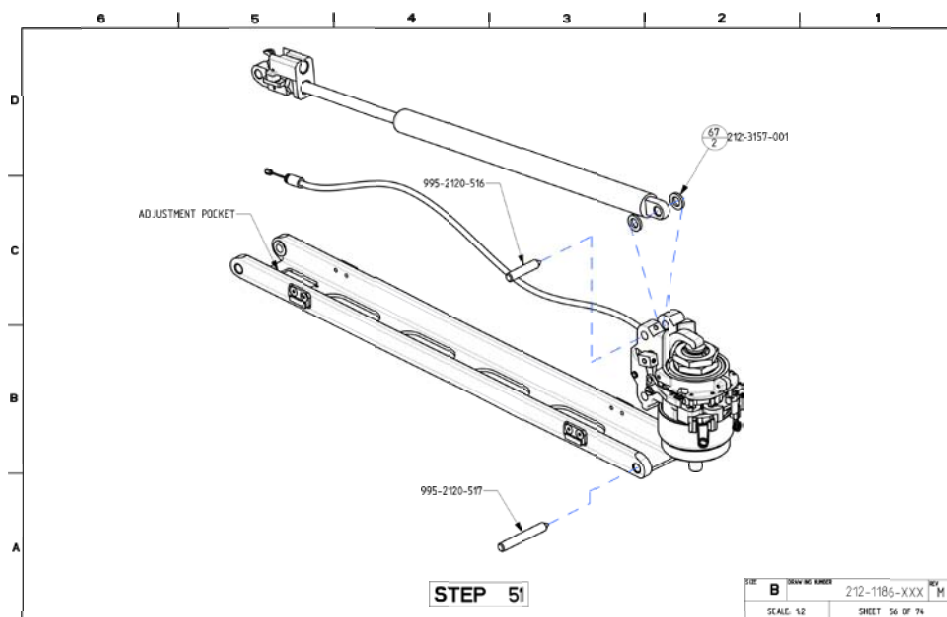
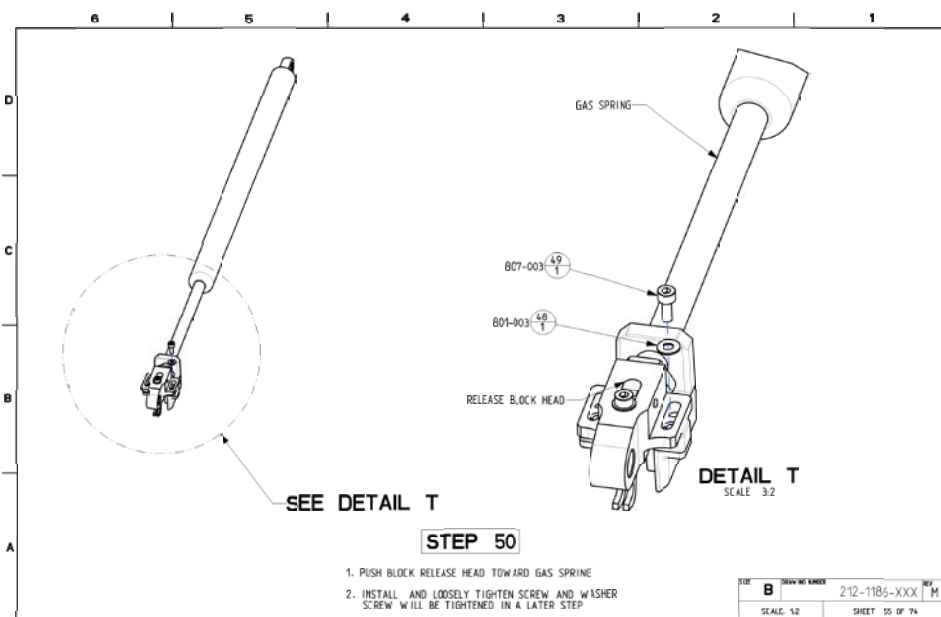
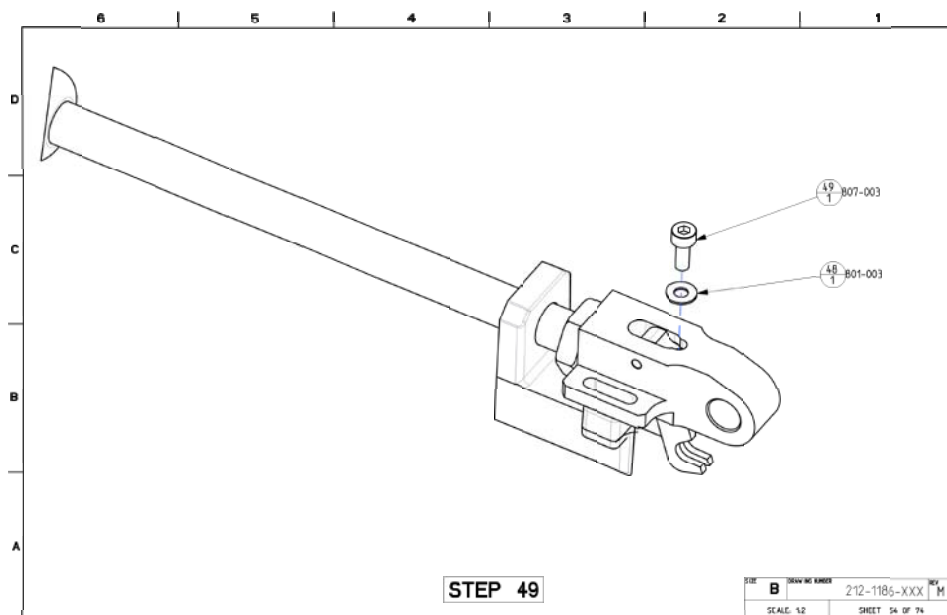
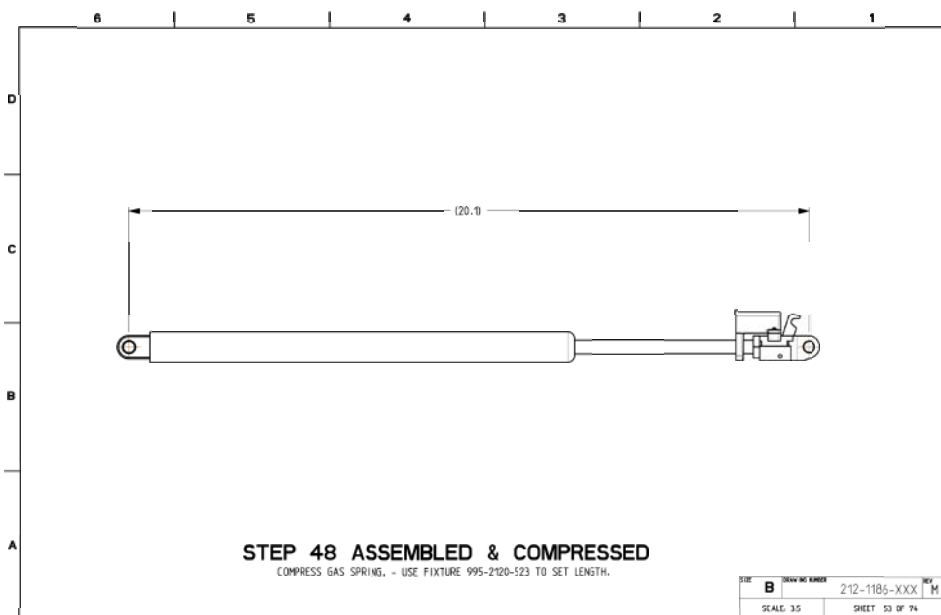


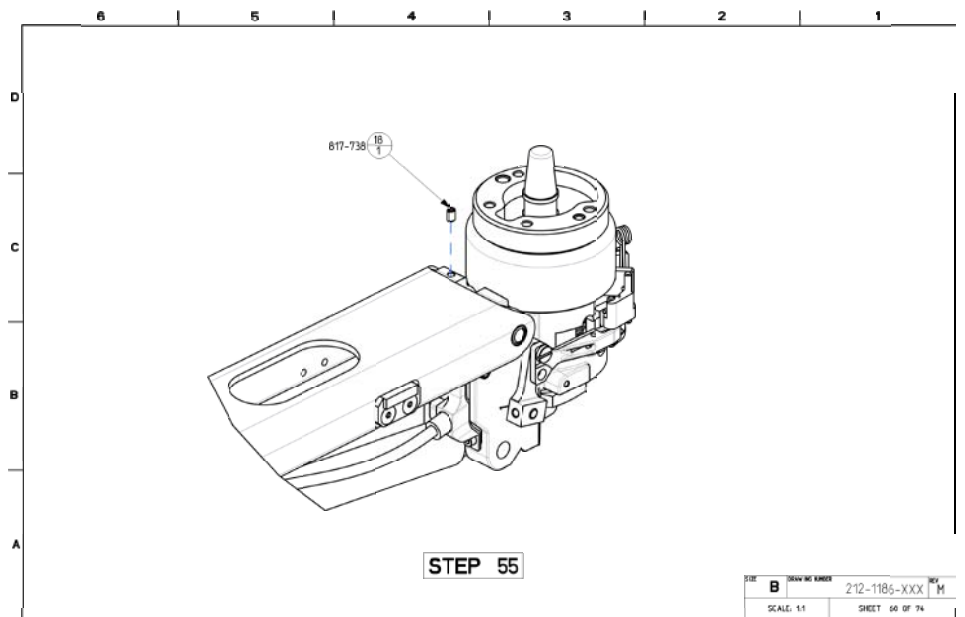
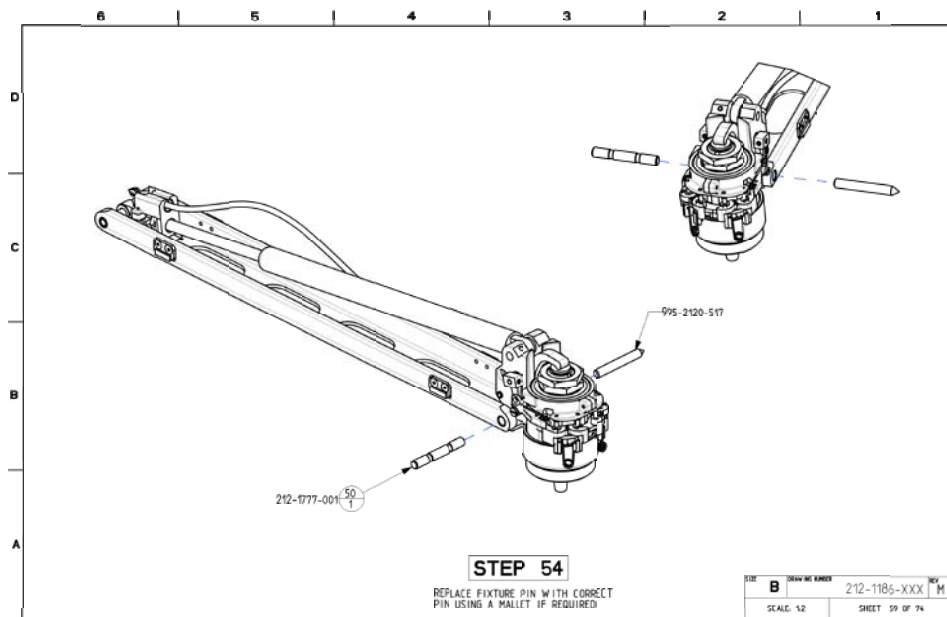
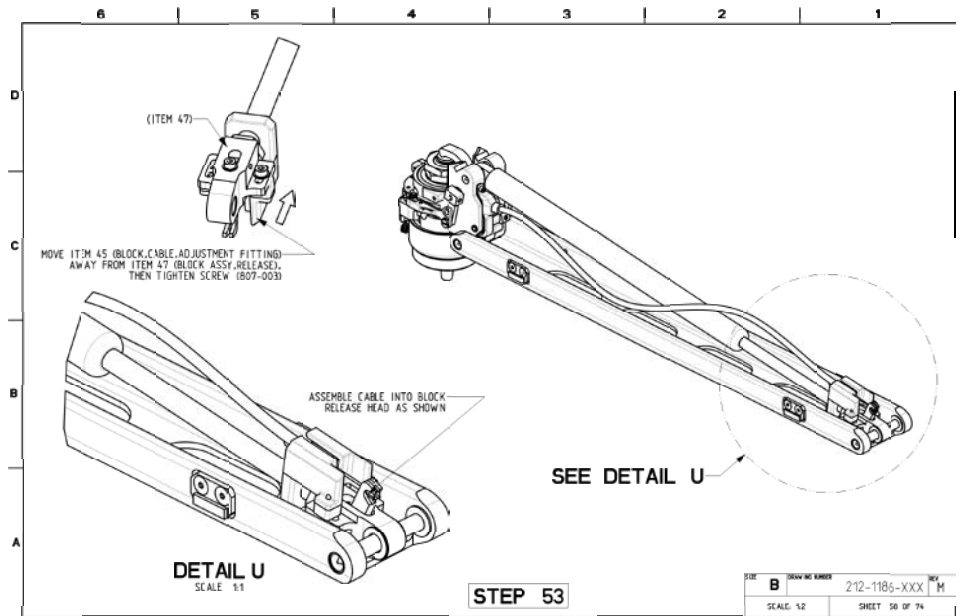
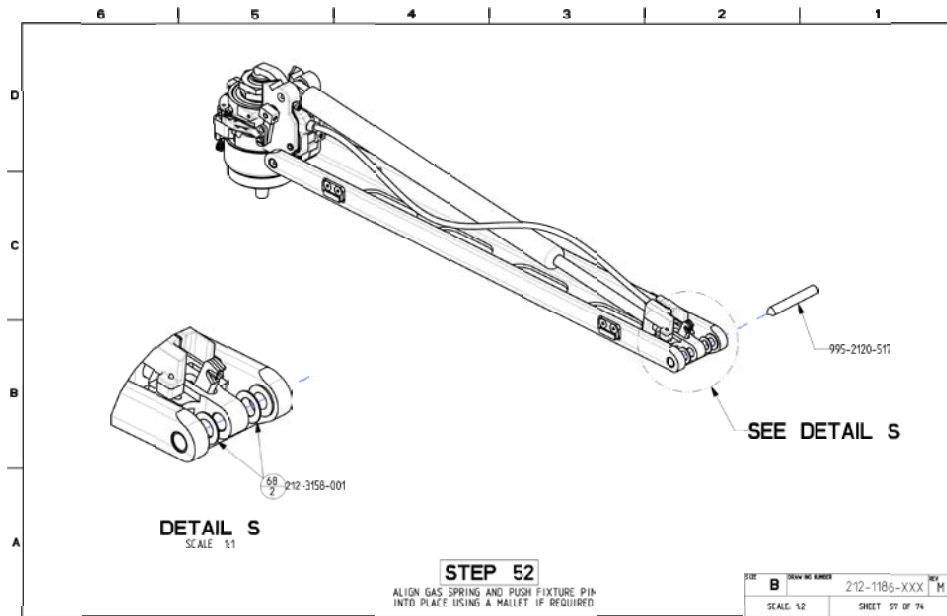


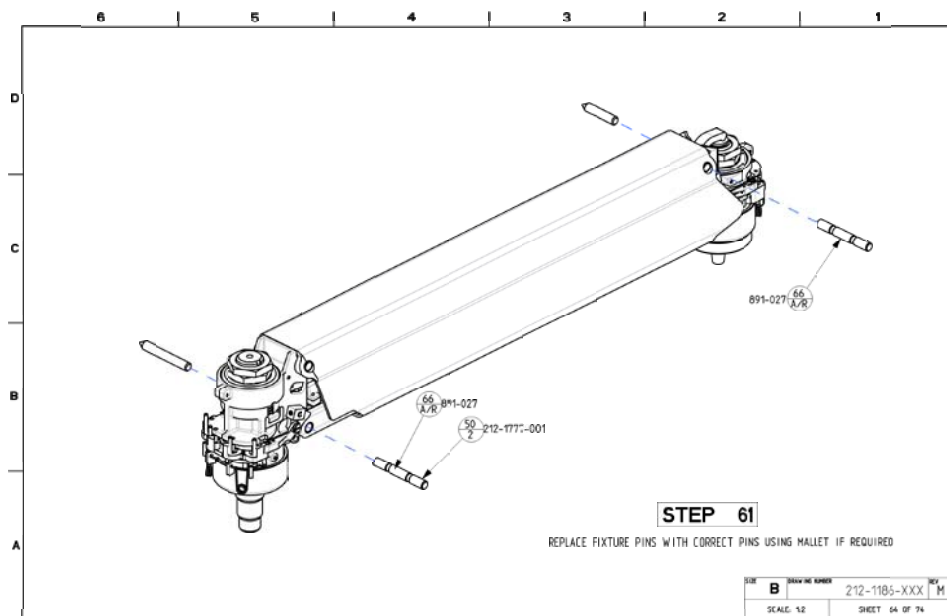
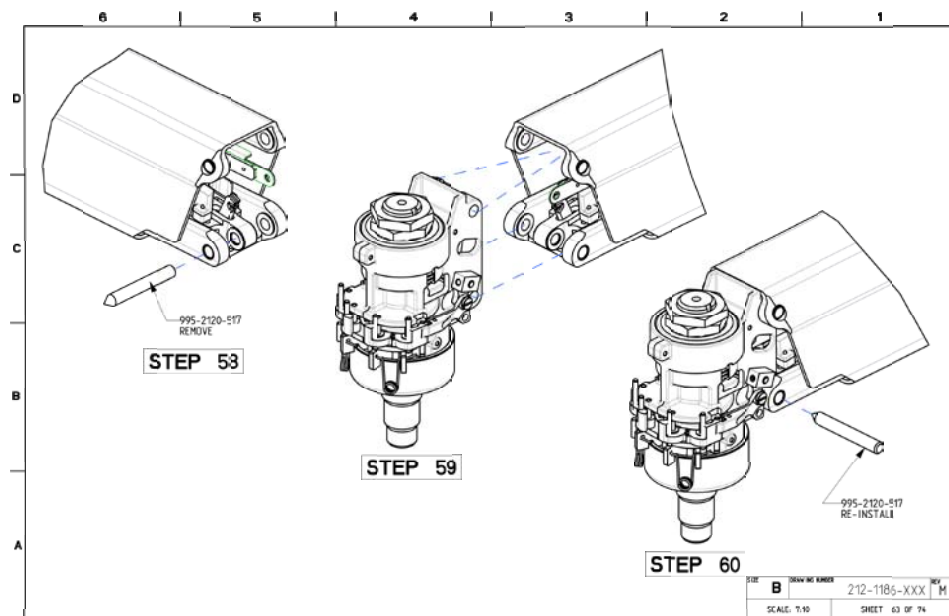
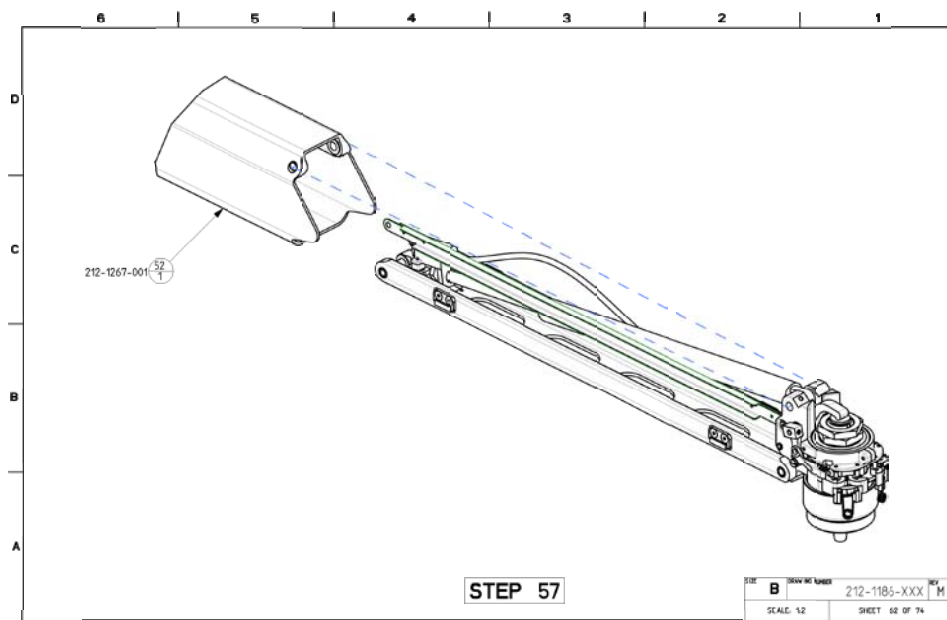
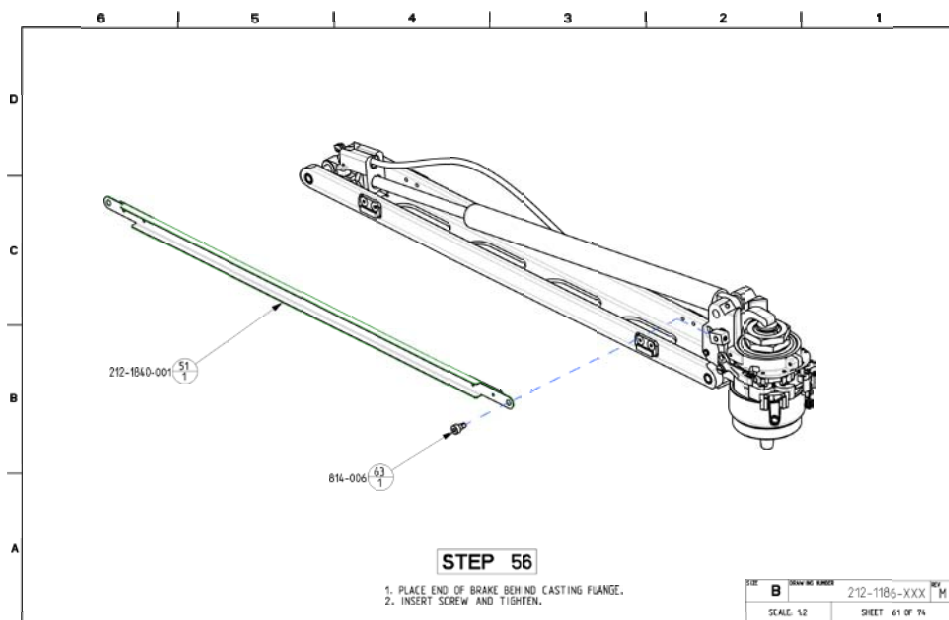


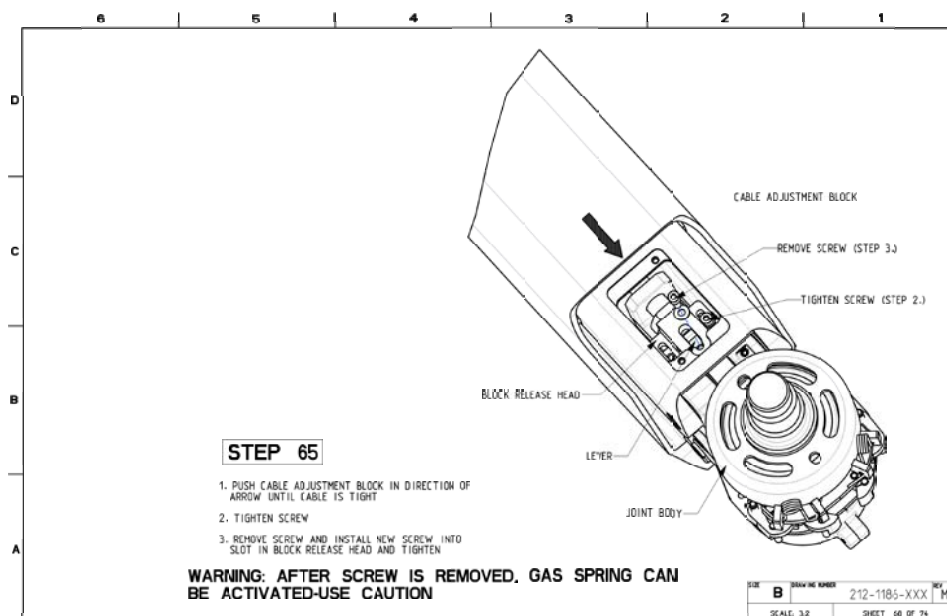


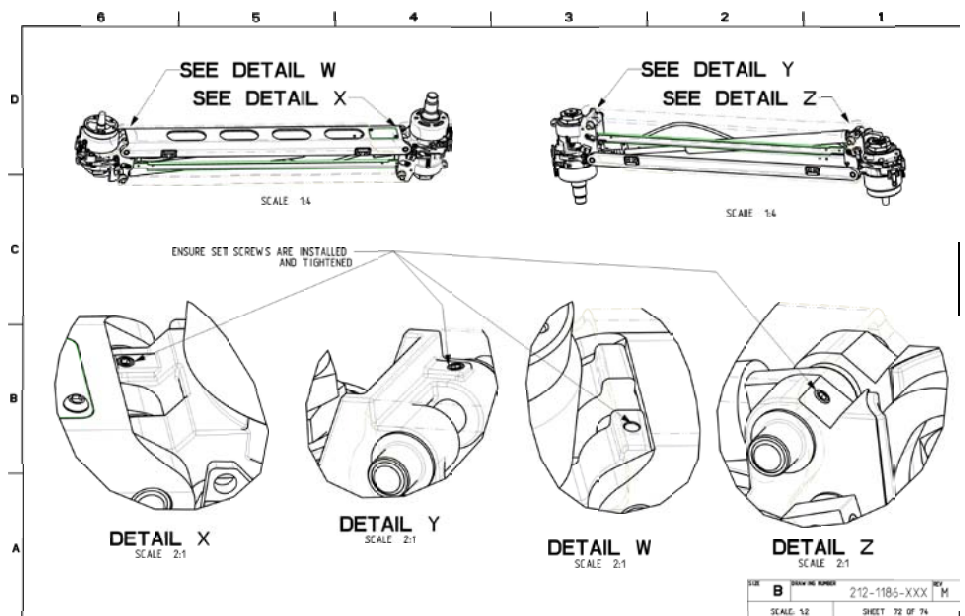
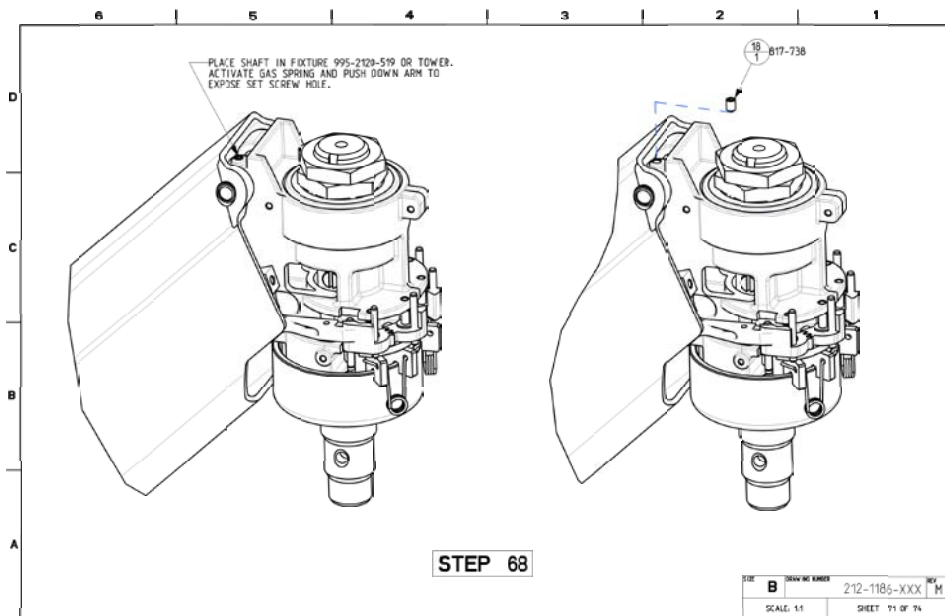
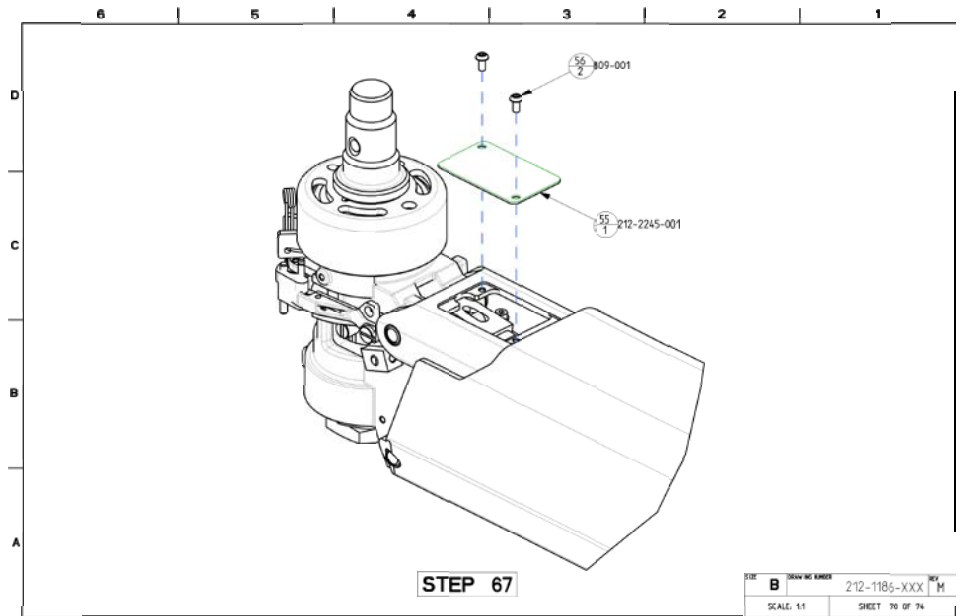
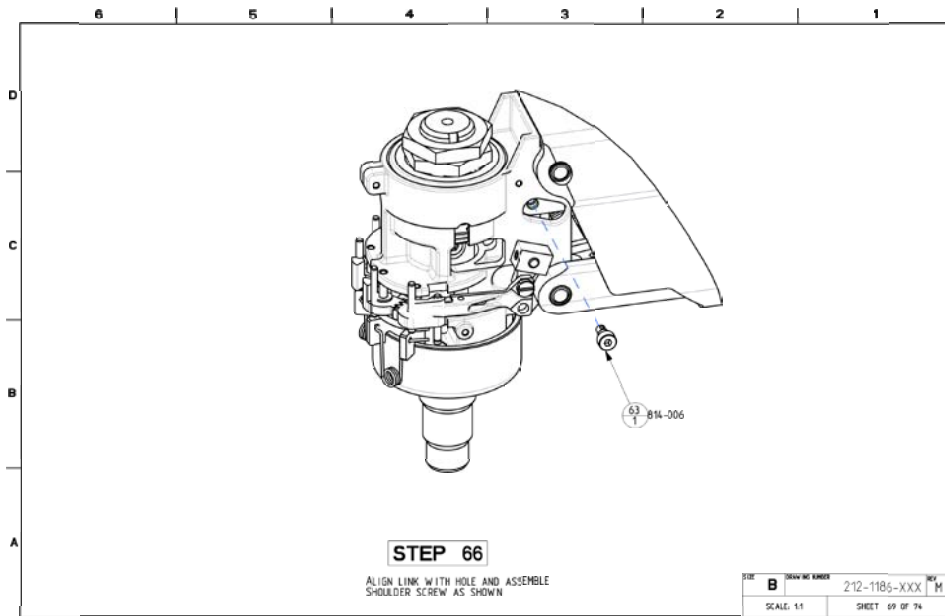


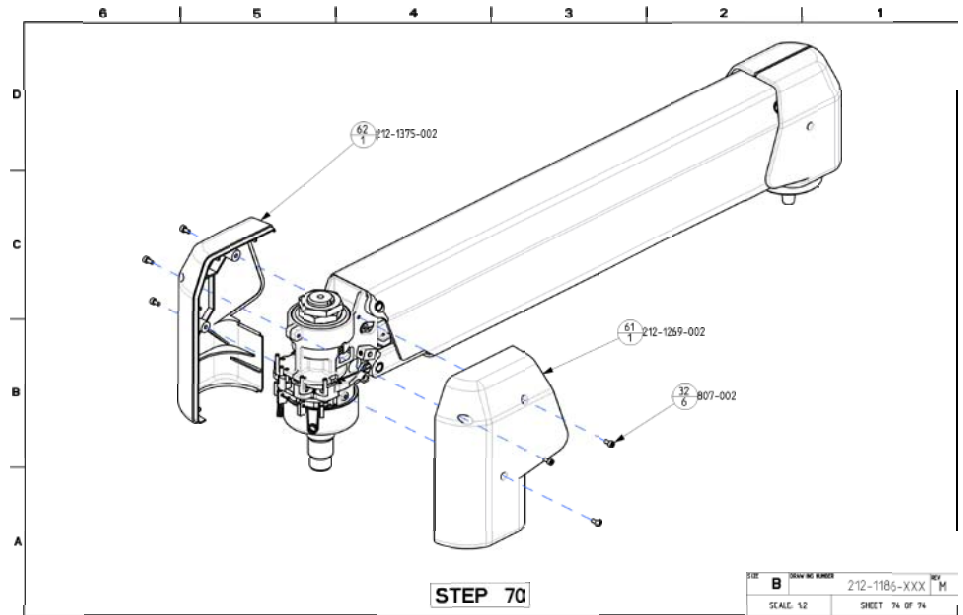
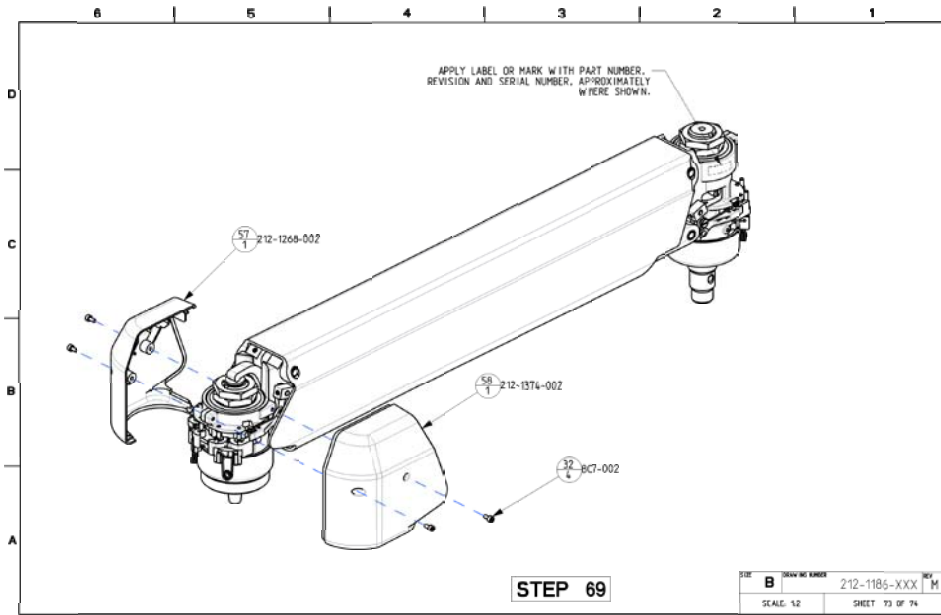












SECTION SEVEN ADDITIONAL INFORMATION

This section is reserved for additional information pertaining to the *Constellation®* Vision System.

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